

How to Make \$500 Yearly Profit

WITH TWELVE HENS

HOW TO MAKE THEM SET SIX DAYS
INSTEAD OF TWENTY-ONE

A WONDERFUL SCIENTIFIC DISCOVERY

FOR WHICH

45 Medals and Diplomas

HAVE BEEN AWARDED TO

A. CORBETT

Professor of Gallinoculture Science

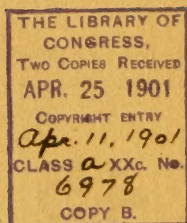
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Scientific American Poultry Breeders' Association

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PROF. ADOLPHE CORBETT,

Formerly Director of the Gallinoculture Institute of Hicksville, N. Y.,

AUTHOR OF THIS BOOK,

IN WHICH A NEW PROCESS FOR RAISING POULTRY IS DESCRIBED
WELL AS THE FOWLS' DISEASES AND THEIR CURES, HAS RECEIVED

45

GOLD AND SILVER MEDALS
AND DIPLOMAS

FROM

it

The Centennial Exhibition,
The Chili International Exposition,
The American Institute,

AND FROM

The most important County and State
Agricultural Societies in the
United States.

TO THE READER

The extraordinary rapidity with which the first editions of this work have been exhausted, and the thousands of letters which have been received from readers in all parts of the world are proofs that the public has derived substantial profit from this discovery.

Among these readers I notice with much pleasure, many eminent writers; men who have devoted their talents and intelligence to the benefiting of the large numbers of farmers and poultry breeders, whose toil has enhanced the national prosperity;—and to these particularly do I dedicate this work, and it was to increase their income that nearly two hundred years ago, the celebrated Reaumur, member of the Academy of Sciences of Paris, after having sacrificed his time and fortune, discovered how to hatch and raise poultry by means of the heat generated by horse manure, it was by continuing the study of this discovery, by thorough, patient and expensive researches, that I am now enabled to teach the public how to utilize this new process in all its workings, with ease and success, for which I earned numerous awards, a list of which will be found further on.

This work also contains the result of my experience acquired during twenty years of practice in raising poultry, therefore this book has been written without

any literary pretensions whatever, but to demonstrate with facts a money-making discovery, and I notice with much satisfaction that the press has devoted both its time and space to explain to its readers the usefulness and simplicity of this discovery to advance the out-of-date poultry raising industry and this corroborates the well-known fact, that the public is guided by it, which induces me to reproduce a few quotations taken from long articles which were called to my attention, hoping their reading will be valuable to those interested in the matter.

THE AUTHOR.

SOME OF THE PRESS OPINIONS REFERRING TO THIS BOOK

New York Herald

. . . This book is a practical treatise on Gallinoculture, and a description of the new process of hatching eggs and raising chickens, the invention of Prof. Corbett, for which several medals were awarded him by all the great exhibitions. It is replete with minute explanations, which cannot fail to be of great service to farmers and breeders.

American Agriculturist, N. Y.

Of late years there have been many efforts made to perfect a method of artificial incubation and to get rid of the hen, which, unfortunately, is too fussy and too slow for advanced ideas. Now that poultry bears so high a price, and young chickens for broilers are worth more than full-grown fowls, it is very desirable to have some way of improving on the slow and unsatisfactory methods provided by nature. . . . The most promising of all the methods, old or new, with which we have become acquainted, is the invention of Prof. Corbett, which we describe and illustrate. . . . Prof. Corbett has been very successful. We saw the proof of his success.

Chicago Tribune

Hatching eggs without the help of a hen is the easiest matter possible, and in no sense whatever contrary to nature Here is an important considera-

tion to farmers: In the winter months, especially out West, little farm work can be done; but if our agricultural readers will only give their time to poultry raising on the above system during that period, the cash books will show unexpected results at the annual balancing. The system itself is so simple that children of six or seven years of age can carry it out as well as adults; perhaps better, for they are more gentle and cautious in their actions.

Chickens hatched and raised by this process are as healthy and vigorous as any to be found; they are incomparably more numerous than those produced by what is ignorantly termed the "natural" method. Some farmers, however, as well as many professional poultry breeders, possess such crow-bar-like backbones that they cannot bend to any proposed improvement on the old style of doing things.

New York Tribune

. . . Professor Corbett has accomplished this result by his discovery, and as he is carrying out his invention on an immense scale at Hicksville, the readers of "The Tribune" may learn something from a report of his operations. . . . All known descriptions of domestic poultry are hatched and raised on this estate by the above means. . . . These descriptions include common barn-yard fowls, Dorkings, Game White Leghorn, Black Spanish, Brahmas, Shanghais, and, as some amateurs choose to call them, Cochinchinas and Brahma-pootras. They are all amenable to the same system, as well as geese, turkeys, ducks, partridges, etc., and all of them are equally productive and remunerative. His process is alike valuable to the housewife of moderate means, passing her leisure

moments in the poultry yard, as to the breeder on a large scale who seeks to supply great city markets with eggs and chickens.

Chicago Inter-Ocean

. . . It is replete with minute explanations, which cannot fail to be of great service to farmers and breeders.

The Nebraska Farmer, Lincoln, Neb.

. . . In this book the professor also demonstrates how to make hens set six days instead of twenty-one.

New York Evening World

. . . We might then elect Professor Corbett mayor and build a solid gold municipal hennery in honor of him.

North Pacific Rural Spirit, Portland, Ore.

. . . He thus not only hatches the chicks without the aid of the hen, but he also explains how to raise them by the same principle.

Cincinnati Times

Hatching eggs without the help of the hen is the easiest matter possible, and in no sense whatever contrary to nature, as Professor Corbett ably demonstrates. Every farmer and housewife should read this work.

Philadelphia Sunday Sun

. . . We have read this book, and have found it the most valuable and the most interesting work for poultry men and farmers which has ever been published.

Illustrated Weekly, N. Y.

. . . This "valuable discovery" has reached per-

fection through the labors and researches of Professor A. Corbett. The discovery will undoubtedly be of great benefit to all who breed poultry.

The Daily Stockman, South Omaha, Neb.

. . . This treatise on Gallinoculture the professor says, that those who let the hens set twenty-one days, are not only guilty of neglecting their interests, but commit an act of cruelty to animals which is punishable by our Great Master.

Southern Agriculturist

. . . This is a very interesting and useful book to the poultry breeder and housewife in the rural districts, and will aid the farmer to hatch eggs by this heat, and thus hasten to the spring market a large number of chickens when the price is good.

New York Press

. . . Prof. A. Corbett has published a book with the significant title of "How to Make \$500 Yearly Profit with Twelve Hens." The author has made a life study of poultry raising and he has applied a natural way of incubation.

Philadelphia Press

. . . Professor A. Corbett, the inventor of the process, has devoted most of his lifetime to the study of animals; he is the author of several works on ornithology. During the last severe winter, with the snow several feet deep on the ground, he was almost overrun with young chickens.

New York Sunday News

. . . It is an old and true saying that "the man who causes two blades of grass to grow where only one was

found before" is a benefactor to his race; and, judging by this standard, Professor Corbett deserves the gratitude of his fellow citizens. He hatches and raises poultry of all descriptions by the simple method of . . .

New York Pathfinder

\$500 DOLLARS PROFIT FROM TWELVE HENS

We have received from the publishers a very interesting and instructive work with the title of "How to Make \$500 Yearly with Twelve Hens." At the first glance of the title, we naturally formed the idea that there was nothing in it, but we commenced reading and found facts and figures therein stated that we were compelled to continue our reading till we had finished, and we came to the conclusion that the assertions made in the title contained more truth than fiction.

To those who are interested in raising poultry there will be found in this book a great deal of information that will enlighten them and demonstrate the possibility that what the author says can be accomplished.

Hundreds of people have started out in poultry raising, but have failed from the want of knowledge and experience necessary for success. This work will supply the necessary conditions for success. A dollar laid out for a copy of this book will be well invested.

The Rural Californian, Los Angeles

HOLD YOUR BREATH AND READ

We have received from the publishers a book bearing the significant title "How to Make \$500 Yearly Profit with Twelve Hens," by A. Corbett, Professor of Gallinoculture Science. Professor Corbett has made a life study of poultry and poultry raising, and he has applied a natural way of artificial incubation

without the use of lamp, hot water or electricity. He thus not only hatches the chicks without the aid of the hen, but he also explains how to raise them by the same principle, and holds that chickens, and all domestic fowls, can be raised at a cost not to be compared with the expense of raising them in the ordinary way. The method is strongly endorsed by leading journals, scientific men and exhibitions. By the latter he has been awarded no less than forty-five gold and silver medals and diplomas. In this book the professor also demonstrates how to make hens set six days, instead of twenty-one.

New York Journal

SOME FACTS ABOUT HENS—AMATEUR FARMERS WILL
BE GLAD TO KNOW WHAT TWELVE
HENS CAN DO

A book which should bring joy into the heart of the amateur and suburban farmer, as well as the less interesting one who makes his living out of the earth, is "How to Make \$500 Yearly Profit with Twelve Hens," by Professor A. Corbett. It confirms the fondest hopes which the amateur entertained before entering into agriculture as a profitable pastime for his spare hours. It is hardly necessary to point out that if you can make \$500 a year with twelve hens, you can make \$2,000 a year with forty-eight hens, and so on.

The way to do this is to hatch out the eggs by a process which the professor describes. . . .

There are all sorts of practicable instructions in the art of hatching eggs in Professor Corbett's work. Those who wish to make large incomes with a limited number of hens should get it and study.

New England Farmer, Boston

. . . The method is strongly endorsed. . . . How to make hens set six days instead of twenty-one, is demonstrated. . . .

The Farmer's Journal, Buffalo

. . . He thus not only hatches eggs without the aid of the hen, but he also explains how to raise chickens by the same principle. . . .

Fireside Reveries, Rochester

PROFIT IN POULTRY

The poultry breeder experiences considerable difficulty and no small amount of loss from the fact that so few hens are good setters. It has long been a well ascertained truth that the females of certain breeds are all but valueless for this purpose.

There is no necessity, however, for the employment of hens in the hatching of eggs, the ancient Egyptians, three thousand years ago, having accomplished the required result by artificial means alone. Other nations in later years have produced similar effects by like methods, so that it is safe to say that, beyond the duty of laying eggs, hens are not needed in the poultry-yard.

We have received from the publishers a book bearing the significant title "How to Make \$500 Yearly Profit with Twelve Hens," by A. Corbett, Professor of Gallinoculture Science. Prof. Corbett has made a life study of poultry and poultry raising, and he has applied a natural way of artificial incubation without the use of lamp, hot water or electricity. He thus not only hatches the chicks without the aid of the hen, but he also explains how to raise them by the same prin-

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The Philadelphia Inquirer

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Our Home Journal, New Orleans

. . . The valuable plan of hatching eggs and raising poultry has made Professor Corbett famous, both in this country and in France. His plan is so simple that it can be operated by any one. . . .

The Monthly Sentinel, Joliet, Ill.

. . . Prof. Corbett has made a life study of poultry and poultry raising and he has applied a natural way of incubation without the use of lamp, hot water or

electricity. He thus not only hatches the chicks without the aid of the hen, but he also explains how to raise them by the same principle.

Country Gentleman, Albany

. . . The only feasible method, which is at the same time cheap. The book, devoted to poultry matters generally, will be found useful by anyone who keeps fowls. . . .

Long Island Farmer

. . . We have read this interesting work and are confident nothing has been published which will prove so important to the farming interest.

Boston Traveler

. . . This book should be in the hands of all who devote time and attention to the raising of fowls. . . .

The Arkansas Gazette, Little Rock

HOW TO MAKE \$500 A YEAR WITH TWELVE HENS

. . . The method is strongly endorsed by leading journals, scientific men, and exhibitions. By the latter, Prof. Corbett has been awarded no less than forty-five gold and silver medals and diplomas. In this book, the professor also demonstrated how to make hens set six days instead of twenty-one.

Chicago Weekly Tribune

. . . The vast crowds of young chickens to be seen from time to time at the Hicksville Institute practically prove that the system there adopted is a correct one, for the youngsters are as bright in plumage, ravenous, and active as any to be found elsewhere, whilst the mortality amongst them is incomparably less.

The Corbett system is equally operative in the dead of winter as during spring, summer or fall. Last January and February, with the snow many feet deep on Long Island, and the mercury trying its best to run to the bottom of the thermometer, the Institute was literally overrun with thousands of newly-born chickens.

American Artisan, N. Y.

. . . Heat has long been used, precisely the same principle is adopted by Professor Corbett to hatch chickens. . . . We recommend everybody to read Professor Corbett's book, which is the best work we have read upon the subject.

The Drovers' Journal, South Omaha

HOW TO MAKE HENS SET SIX DAYS INSTEAD
OF TWENTY-ONE

The poultry breeder experiences considerable difficulty and no small amount of loss from the fact that so few hens are good setters. It has long been a well ascertained truth that the females of certain breeds are all but valueless for this purpose.

There is no necessity, however, for the employment of hens in the hatching of eggs, the ancient Egyptians, three thousand years ago, having accomplished the required result by artificial means alone. Other nations in later years have produced similar effects by like methods, so that it is safe to say that, beyond the duty of laying eggs, hens are not needed in the poultry-yard. . . .

Prof. Corbett has made a life study of poultry and poultry raising, and he has applied a natural way of artificial incubation without the use of lamp, hot water or electricity.

The Progressive Farmer, Mt. Vernon

PROFIT IN POULTRY

We have from the publishers a book bearing the significant title "How to Make \$500 Yearly Profit with Twelve Hens," by A. Corbett, Professor of Gallinoculture Science. Prof. Corbett has made a life study of poultry and poultry raising, and he has discovered a natural way of artificial incubation, without the use of lamp, hot water or electricity. He thus not only hatches the chicks without the aid of the hen or artificial heat but he constructs brooders on the same principle and holds that chickens, and all domestic fowls can be raised at a cost not to be compared with the cost of raising them in the ordinary way. The method is strongly endorsed by the leading journals, scientific men, and exhibitions. By the latter he has been awarded forty-five gold and silver medals and diplomas. In addition to hatching and raising, the book contains plain and simple treatment of all known diseases of fowls, how to choose, how to market, etc.

The Western Plowman

. . . In this book the professor also demonstrated how to make hens set six days.

He has been awarded no less than forty-five medals and diplomas. . . .

The Southern Weekly News

. . . Professor Corbett has made, a life study of poultry and poultry raising and he has applied a natural way of artificial incubation without the use of lamp, hot water or electricity.

Moore's Rural New Yorker

The poultry breeder experiences considerable diffi-

culty and no small amount of loss from the fact that so few hens are good setters. It has long been a well-ascertained truth that the females of certain breeds are all but valueless for this purpose. . . . There is no necessity, however, for the employment of hens in the hatching of eggs, the ancient Egyptians, three thousand years ago, having accomplished the required result by artificial means alone. Other nations in later years have produced similar effects by like methods, so that it is safe to say that, beyond the duty of laying eggs, hens are not needed in the poultry-yard. A visit to the Gallinoculture Institute of Professor Adolphe Corbett, at Hicksville, L. I., will satisfy the most skeptical on this point. Fowls of all breeds and ages are there to be found in immense numbers; all of them in the best condition of health. The system employed is the invention of Mr. Corbett himself. . . . The poultry raised by this method are in all respects as healthy and vigorous as any to be seen elsewhere. . . .

Hempstead Inquirer, N. Y.

The exhibition at the late Fair of the Queens County Agricultural Society of Corbett's Hatching Apparatus attracted universal attention and comment. It was something, the value of which to farmers and poultry raisers was comparatively unknown. The award of a gold medal and diploma to Mr. Corbett is but a just acknowledgment of the value of his apparatus, and will be approved by all who, like ourselves, have seen it in operation.

Daily Saratogian, N. Y.

The idea of hatching eggs by artificial heat is no new one, nor even the idea of using the natural, even

heat of . . . but no one has succeeded before Prof. Corbett in inventing a simple apparatus for utilizing that kind of heat. After much experimenting and expense, at last Prof. Corbett completed an invention, very successful in hatching healthy chickens, and said by good judges to be the great discovery of recent years. Several of the boxes are on exhibition, chicks of different breeds and ages running about or scuffling for crumbs and grain. A crowd stood about this exhibition hour after hour, and indeed it is one of the most interesting features of the fair.

The Evening Post, N. Y.

This machine, or rather machinery, as there are two processes connected with it, does the whole work with the exception of producing the eggs. The eggs are put into one compartment and the heat required for incubation is obtained from . . .

OFFICIAL AWARDS

MEDAL AND DIPLOMA BY THE UNITED
STATES INTERNATIONAL EXHIBITION

MEDAL AND DIPLOMA BY THE AMERICAN
INSTITUTE, N. Y.

GRAND MEDAL OF HONOR AT THE
INTERNATIONAL EXHIBITION AT
SANTIAGO, CHILI

GOLD MEDAL AND DIPLOMA BY THE
QUEENS COUNTY, N. Y., AGRI-
CULTURAL SOCIETY

GOLD MEDAL AND DIPLOMA BY THE
FARMERS' AND MECHANICS'
CLUB, HICKSVILLE, N. Y.

NEW YORK STATE FAIR, ROCHESTER,

First Premium and Certificate of Merit.

SUFFOLK COUNTY, N. Y., AGRICULTURAL
SOCIETY

First Premium and Diploma.

AMERICAN INSTITUTE

Diploma of continued excellence awarded one year
after the first diploma.

DIPLOMA BY THE NEW JERSEY STATE
AGRICULTURAL SOCIETY

DIPLOMA BY CAPITAL STATE FAIR ASSO-
CIATION, AUSTIN, TEXAS

DIPLOMA BY NORTHEASTERN AGRICUL-
TURAL SOCIETY OF INDIANA

DIPLOMA BY EGG HARBOR CITY NEW
JERSEY AGRICULTURAL SOCIETY

DIPLOMA BY MUSCATINE, IOWA, AGRI-
CULTURAL SOCIETY

DIPLOMA BY FREMONT, OHIO, AGRICUL-
TURAL SOCIETY

DIPLOMA BY CARROLLTON, OHIO, AGRI-
CULTURAL SOCIETY

DIPLOMA BY BROCTON, MASS., AGRICUL-
TURAL SOCIETY

DIPLOMA BY COLUMBIA COUNTY AGRI-
CULTURAL SOCIETY OF PENN'A

DIPLOMA BY DELAWARE COUNTY, OHIO,
AGRICULTURAL SOCIETY

DIPLOMA BY UNION FAIR ASSOCIATION
OF CENTRALIA, ILL.

DIPLOMA BY JO-DAVIESS COUNTY AGRI-
CULTURAL SOCIETY OF GALENA, ILL.

DIPLOMA BY FRANKLIN COUNTY AGRI-
CULTURAL SOCIETY OF PENN'A

DIPLOMA BY COSHOCTON, OHIO, AGRI-
CULTURAL SOCIETY

DIPLOMA BY JEFFERSON COUNTY AGRI-
CULTURAL SOCIETY OF OHIO

DIPLOMA BY DENISON, IOWA, AGRICUL-
TURAL SOCIETY

DIPLOMA BY LUCAS COUNTY AGRICUL-
TURAL SOCIETY OF IOWA

DIPLOMA BY MACOMB COUNTY AGRICUL-
TURAL SOCIETY OF MICHIGAN

DIPLOMA BY FRANKLIN COUNTY, MAINE,
AGRICULTURAL SOCIETY

DIPLOMA BY BRADFORD COUNTY AGRI-
CULTURAL SOCIETY OF TOWANDA, PA.

DIPLOMA BY EATON COUNTY AGRICULTURAL SOCIETY OF CHARLOTTE, MICH.

DIPLOMA BY STARK COUNTY AGRICULTURAL SOCIETY OF CANTON, OHIO

DIPLOMA BY LENAWEE, MICH., AGRICULTURAL SOCIETY

DIPLOMA BY LIVINGSTON COUNTY, N. Y., AGRICULTURAL SOCIETY

DIPLOMA BY THE VAN BUREN COUNTY AGRICULTURAL SOCIETY, PAW PAW, MICH.

DIPLOMA BY THE LYON COUNTY, IOWA, AGRICULTURAL SOCIETY

DIPLOMA BY THE HILLSDALE COUNTY, MICH., AGRICULTURAL SOCIETY

ALBANY, N. Y., AGRICULTURAL AND ARTS ASSOCIATION

First Premium and Certificate of Merit

SARATOGA COUNTY, N. Y., AGRICULTURAL SOCIETY

First Premium and Diploma of Merit

INTRODUCTION

"There is nothing new under the sun," says Solomon the Wise, so that artificial incubation is also not a new thing, although little practiced. In the most ancient times the Egyptians knew the art of hatching eggs without placing them under hens. These enlightened and wise people who had found every means to make life easy and pleasant only because they had sought it through agriculture, yet possessed several ideas which we have not yet discovered, and almost now despair to find out, and it is only by direct observation and according to the harmonious laws of nature that such discoveries are made. It is hardly necessary to call the attention of the public to the manner in which birds set on their eggs. And every one knows also, that there are some birds (hens for instance) which not only hatch out eggs that they have not laid, but even those also of other species.

These peculiarities in revealing themselves to our notice have naturally led us to think there should be, perhaps, a means to obtain broods independent of the hen, since her intervention has been already shown to be insignificant and without any regard to the species. This our apparatus does accomplish. I was convinced of the possibility of it on reflecting that even the sun could take the place of the bird—as it serves in some instances to hatch out eggs, we know thus the crocodile, turtle and the ostrich bury their eggs in the sand, and it is the warmth of the sun that hatches the young ones. The example of the ostrich, especially, appears

to be conclusive, therefore, I believe that if the sun could hatch out the eggs of the ostrich it would not be impossible to have a like success with other eggs by applying artificial heat.

To-day the Museum of Natural History in Paris, exhibits to the view of the curious, enormous serpents born in hot-houses by the artificial incubation of their eggs.

Nothing in fact is easier, says an author named Parmentier, than to create the art of hatching eggs without the aid of the hen. It only consists in imitating the process that chance has indicated to man and simplifies itself to this, to choose a place where the eggs can receive the same temperature that they would have under the bird that laid the eggs and during the time that would be required to hatch them under her wings.

ARTIFICIAL INCUBATION

The art of artificially hatching hens' eggs has been known in Egypt and China for centuries. In Egypt the invention is attributed to the ancient priests of Isis. According to some historians, Isis and Ceres are the same benignant princes who reigned once over Egypt. According to others the art of agriculture is personified under these names, and she was represented with a garland of ears of corn on her head, holding a lighted torch in one hand and in the other a poppy, which was sacred to her.

The priests of the temple of Isis, in Egypt as well as in Celt, appear especially to have been employed in agriculture and rural economy. The importance of this seems to have deserved a like institution since they studied this great science and extended its principles under the name of the goddess Ceres, who was the divine guardian of the fields and every kind of nature's produce.

Whatever it was it seems certain that the prosperity of the ancient kingdoms of Egypt, Damascus, Palestina, Jerusalem and Samaria was, in a great measure, due to the benefits they derived from the artificial hatching of hen's eggs.

The ovens, or hatching places, of the Egyptians, called in the country *ma-mals*, and which were very numerous in the kingdoms before mentioned, are now only in existence in Mansoura, in the village of Berma, situated in the delta of the Nile. The latest historians give the name of Behamians to all the inhabitants of

five or six villages, of which Berma is the chief and center, and where the ovens are most numerous. The inhabitants of these villages are the only ones who to-day have preserved the hereditary industry of directing these ovens.

On research I find that the ovens of Egypt alone in olden times hatched out annually one hundred millions of chickens; even to-day the ma-mals of the Behamians still hatch out annually thirty millions, but history is silent upon the kind of nourishment given to these chickens. But one will say, how is it that so flourishing and prosperous a business has for the most part disappeared from these countries, and is only found to-day in a small and limited province of the Egyptian Delta? I cannot account for it any more than that these countries have become barren and depopulated, which once, according to history, were fertile and inhabited, and of the destruction of towns and cities of which the ruins still exist and bear witness to their ancient splendor.

To the Emperor Constantine is attributed a memoir upon the artificial incubation of the Egyptian ovens, so much did he consider the multiplication of every kind of poultry to the welfare of the nation.

Another memoir on the same subject is attributed to Democrates, the ancient philosopher who was in the habit of crying with joy on beholding the beauties of nature in opposition to his companion, Heraclites, who always laughed at the same.

Plinus, the naturalist, and Diodorus, of Sicily, speak in their writings of the great benefits a nation would receive from this method.

The history of the Egyptian ma-mals and the Chinese boxes (these are only for hatching duck eggs)

was brought into Europe by the Pastor Juan Gonzales, of Mendoce, in Spain, and translated into French in 1600 by Luc de la Porte.

Before Gonzales' time historians had spoken of the Egyptian ovens, and amongst them Aristot, but these had only written from traditions, whilst at Florence and at Naples they have already built these ovens or kilns.

In the year 1415 Charles VII. built some à Amboise in France, and Francis I., at Montrichard, about the year 1540. These undertakings probably met with but little success, because these ovens were built according to hearsay or tradition. One of the Florentine dukes sent for an Egyptian director, and they say that this man succeeded well. Francis I. also followed the same plan and met with a like success; but, notwithstanding this, it was abandoned. A physician of Nanterre, named Bonnemain, is the first since 1777 to establish hatching ovens, which communicated their heat to the eggs by means of the circulation in tubes of hot water. Bonnemain tried every expedient, and, after several unsuccessful attempts, started an establishment at No. 4 Rue des Deux Portes, in Paris, and where he had these ovens sufficiently large, that he hatched out one thousand a day. He is often accused of exaggeration, but nevertheless history records the fact that he had chickens all the year round, and that he supplied the Imperial Court of France in all seasons, and that the public markets were overstocked with his birds. The disastrous events of 1814 were the ruin of this fine establishment. Bonnemain published a pamphlet in 1816 giving a description of his ovens regulated by fire, and he said his method was the result of fifty years' deep meditation and trials.

In this pamphlet he does not give the key of his method, but asks for subscriptions to buy his ovens, and to induce amateurs to try it, he gives statistics of the profit each hatching gave every year.

Bonnemain, moreover, assures us that he did obtain this success during fifteen years, and it was only after his establishment was ruined by the invading armies that he asks for aid and assistance from the government, capitalists and amateurs; but all failed him, either from disdain, want of confidence, or from political motives.

The price of his boxes was very high, the small ones costing \$2.00 an egg, and large ones 75 cents. His fire regulator was considered a very useful invention.

Martial Bonnes, mathematical professor and astronomer in the observatory at Toulouse, wanted the government to send a commission to Egypt to introduce the art of making these ovens or machines for hatching chickens, and to bring back at the same time experienced Behamians to manage these ovens, etc.

Another author, under the same administration of the Haut Rhin, I find has published also a book explaining to the government the great importance of this importation to France. He says: "I would like to see these men and their machines enter France and establish themselves in the palaces of our king;" and then he adds: "The enemies of this enterprise will at first scoff at and ridicule the project of hatching chickens artificially, and will have a thousand stories to tell of these hens' eggs, the quality of their flesh, etc.; but all these pleasantries ought not to discourage the undertaking, and they will pass away as smoke."

I can only join my good wishes to the hopes of these men—true friends to the prosperity of their country

and to the welfare of every one, which would result in the multiplication of poultry yards.

I will now relate the attempts that have been made of this kind by my contemporaries, and the success they have met with.

In 1844, Mr. Bir, a merchant of Courbevoie, near Paris, sent to the exhibition of that year, a box for hatching, containing 60 eggs.

In 1848, Mr. Vallie, keeper of the serpent gallery at the museum of the Jardin de Plantes, at Paris, sent also to the exhibition of that year, an incubator to hatch out 100 eggs.

These two boxes, made after Bonnemain's model, but much smaller, were heated with lamps. Mr. Vallie even admitted that his box was not fit to be used on a large scale, but only as a piece of furniture for amateurs. About the same time, however, appeared the great incubator of Messrs. Adrien, Jr., & Tricoche, who founded an establishment at Vaugirard, France. In 1853 Mr. Cantallo established an institution of numerous incubators, and, according to the English papers, these are all heated with lamps and he sends a large quantity of poultry to the London market annually.

Dr. Preterre, dentist, of New York, has also devoted much of his time to artificial incubation; I have seen and met him at the Farmer's Club at the Cooper Institute, New York; and in March, 1874, where he exhibited numerous chickens which were hatched by means of horse manure.

There are also several incubators in the United States. Some have the lamps on the top, and others have them on the sides; all have more or less pipes holding mercury or alcohol.

I believe I have now exhausted all my information about recent incubators, and have posted my reader in all that has been done in this line, and he can now form some idea of the different experiences that have been made to arrive at a practical and paying machine, for it is not enough to hatch eggs, but it must be done with profit; for if, to obtain a few chickens, you must spend more than they are worth or more than they will sell for, the thing is a failure; and I have never heard that any great success has been attained by machines heated by lamps. One can easily understand that those persons who wish to engage in the raising of poultry, are much embarrassed, and hesitate before risking their money in an enterprise in which the best means to carry it out are still being looked for. Thus does it happen that, after due reflection and deep study, I have decided to found my establishment, and before investing \$40,000 in a poultry establishment, I certainly ought to thoroughly understand what I am undertaking, and even better than any other. I ought to be most interested in finding the most advantageous manner of applying artificial incubation. My first plan was to follow the natural raising of hens, etc., for, like many others, I had only a weak reliance on the present machines, for I have seen them in operation both in Paris and London; but both proprietors told me that they did not believe it would be practicable on a large scale; for an establishment that would contain 60 artificial hatching boxes in operation ought to have 120 lamps burning night and day with kerosene; and there was great danger, to say nothing of the difficulty of directing to an equal height such a number of wicks to give to each incubator an

equal warmth. And how much money would it not cost daily for kerosene?

These considerations, added to those of the necessary expense required to buy these machines, were a very serious objection to me, and I was forced to reject this system, without condemning it, however. I bought several machines to try them, those that gave me the greatest returns were kept in operation for a time; but from one only a small percentage, and from another I never could obtain a single hatching, and thus it was that I did not spend much time with such expensive toys and, at the same time, with such little profit. I still continued to look for some other way of arriving at the desired end, and to see if it was not possible to obtain practical and commercial results, for, if it was once found, I had before me an important affair; with my organization I could take care of any quantity of chickens that I could hatch. I then bought every book that treated of incubation, and you can judge my surprise when I found that each author recommended particularly a different machine. It was not long before I discovered that these recommendations were only complimentary, for I had already one of the machines thus strongly recommended by one author, and from which it was impossible to hatch out a single chicken. But what struck me most was that only a few of them spoke of Reaumur's system, amongst which is Burnham, who mentions in his work, at page 124, that Mr. Manowry at Mouy, France, had adopted Reaumur's system.

However, not being able to let him pass without mention, the greater number ingenuously say that he did obtain some success, but they take good care not to give any explanation; this is easily understood, as

they would have injured their favorite. Our astonishment changes into indignation when we read that these authors, who were so reserved about the celebrated Reaumur, were lavish in their praises of the sellers of the boxes without value (the rotten work of some tinsmith), who, perhaps had money enough to buy the writer's good will.

Mr. Reaumur was a clever French naturalist and author of several works, of great value and several of his treatises are well known and the best that were written before Buffon's time; in consequence of these works, Reaumur was made a member of the Royal Academy of Sciences in Paris, where he read his first paper on St. Martin's Day, 1747, when the public of that time seemed to have judged as he had done of the great advantages to be expected of making a business of chicken raising and he further stated, one hundred and fifty years ago, that the multiplying of poultry yards, of which such a large number are consumed, could not be overdone.

The Abbé Copineau undertook to perfect Reaumur's method; in 1780 he published a work called "Artificial Ornithotrophie; or, The Art of Hatching and Raising Poultry by Means of Artificial Heat." The same work was re-published in 1795, under the title of "Man Rival to Nature; or, The Art of giving Existence to Birds, and Principally of Poultry." In 1816 the learned Bonnemain also published a very instructive memoir, and of real value. So that at last we find a number of eminent men occupying themselves with this important question.

RESEARCHES AND SUCCESS

The public will now understand from what sources I have sought to learn; and after all the experiments

I have made, I concluded, at last, that Reaumur's system appeared to be most feasible—it being the easiest and less expensive to follow. I therefore, from that time began to practice it, thus: six casks were placed in a heap of manure, and 600 eggs were placed in them. All were lost. It was in winter, and I thought that in the cellar the casks would keep at a better degree of heat; but there not being room enough, and the want of ventilation, were the causes of my failing. Not in the least discouraged, although disappointed, I again placed eight casks under an old shed, and this time put 800 eggs in them; the success would have been entire had not the rain fallen one day on part of the manure heap, which cooled it off. Nevertheless, from the other part I proved the success, and you can judge how delighted I was to see several hundred young chickens hatched.

Let the reader rightly understand that we did not have entire confidence in the success to be derived from this venture at the time, as it was necessary to find a place to put the newly-hatched chickens in, which appeared to us like a true army of invaders. Those persons who have never seen hundreds of young chickens of one and two days old, can form no idea of the busy and noisy household. Luckily we had an artificial mother, warmed by one lamp, and I placed the young chickens in it; whether it was the smell of the kerosene that was injurious to them, or whether the heat produced by the hot water did not accomplish the wished-for object, I lost the greater number of them and I had the misfortune to prove that it was especially from crowding themselves in the corners that they died. This was a bitter disappointment to me. As there was now no doubt that I could

hatch eggs with the aid of manure it only remained to improve on the casks and mothers and the manner of directing or regulating the heat, besides providing the proper and necessary ventilation, and to supply the necessary quantity of air. I first of all began my improvements on the artificial mother, in suppressing the corners as much as possible, and at last had one built without corners, measuring twelve feet in length and ten feet in width, and warmed by two kerosene stoves. I thought myself very happy in having such a large artificial mother in which I could place 1,800 chickens of different ages. Everything was complete in it, park, perches and ventilation. Unfortunately, one night in April one of the lamps exploded and set the building on fire in which it was (which measured 200 feet in length, and cost \$6,000). The dog gave the alarm and soon every one was awakened and commenced to extinguish the fire by means of the India rubber hose kept on the premises for such a calamity and with a plentiful supply of water the building was saved by a miracle, but I was not so fortunate with my young brood—nearly all of them were smothered or suffocated. Again I was forced to resign myself to fate and give up the raising of my pullets artificially by means of lamps. The insurance company paid the damage to the building, but the poultry was not insured.

Having got over this loss I puzzled my brains to find a new system of raising them, and began to think I should have to renounce it, when the happy thought struck me to try the manure heap, and to see if I could not make it do for the chickens what it did so well for the eggs. I then placed a common box in the manure and put in it some newly-hatched chicks; this was

rather a bold proceeding, for the chances were that I should find only dead ones in the morning. Judge my surprise when at five o'clock in the morning I opened the box and saw all these little ones with their large eyes open, waiting their first meal, and they were quickly fed.

This, then, was the solution of the great problem. Was it chance or luck? Nevertheless I had before me the fact that there were animated beings born in manure and receiving the warmth necessary for their welfare from the same source. Having already received so many checks and deceptions, I hesitated and refrained from shouting "Victory!"—Eureka it might be.

A few more days will show me what success I might depend on in using this means of raising them, and all those that were daily hatched received the same treatment. At length, after fifteen days' experience I had only to fight with the corners of the box. For those who have the opportunity of visiting an establishment for rearing young chickens know full well how they will crowd into the corners; the stronger ones mount on the backs of the weaker, and these are, almost in all cases, victims to their companions.

I now began to look for a box that would, in a certain degree resemble the hen. Everybody knows that if she gives warmth to the chickens it is by covering them with her wings; but again, if an account was taken of the number she crushes by treading on them, of those she loses in walking round with them, you can easily see that the raiser pays dearly for the heat she gives. I will admit there are some mothers patterns of gentleness, tenderness and carefulness, and quite worthy of the praise and admiration bestowed on

them, and will allow several authors to say all they can in their favor; but if they were like myself, daily watching them and convinced of the reality, they would soon see how very many in general, destroy their young; it is by millions yearly that they could be counted. Up to the present time very few have troubled themselves about this great question, for the simple reason that this enormous loss being shared by all, it has not awakened the attention of the great poultry raisers. One of my neighbors who raises a great quantity of poultry, especially turkeys, lost in one day sixty-four chicks, their careful mothers having taken them off to a distance, when the rain came and they were lost. This man, a clever farmer, suffering so great a loss, has he ever thought he might avoid it? I don't believe he has.

In order that my apparatus should be good, I kept strict account of the heat given to the chickens by the mother, the movement of the wings and especially of the amount of air that penetrated under her. After several days' labor and combinations I succeeded in obtaining all these results, and I found I had replaced the hen with great advantage, for really my apparatus is much superior to the hen. The stomach and the wings are, by a clever combination, beautifully imitated. Especially do chickens find this to be the case whilst growing up as well as when they are small. This apparatus having so admirably succeeded in raising chickens, why could it not serve also to hatch them? To this important question I could not immediately reply; so I began another experiment, and the first trial failed, and upon my making further researches I discovered that what prevented the success of the incubation was simply in the quality of the

wood of which the boxes were made. I then made another apparatus and new experiments, and at last succeeded.

From this day I found I had solved an important problem, and that I could hatch and raise chickens without the assistance of any lamp, nor with any fire, and that manure alone would do it. Ah! if Reaumur could rise from his ashes how happy would he be to see these facts established, and I would wish to see present near the hatching broods those authors who have so little gratitude for this renowned man of the past century.

I wished to ascertain the commercial value of my invention, therefore I exhibited my apparatus at numerous state and county fairs, as well as several international exhibitions; the newspapers gave a description of it, unboundedly praising its merit, and the judges of awards unanimously reported that it was the most correct, the cheapest, and the most natural plan ever conceived, for which

FORTY-FIVE MEDALS AND DIPLOMAS

were awarded to me, accordingly, with the following facts:

1st. Anyone who can handle a saw and hammer and drive a nail is able to make a similar apparatus.

2d. It requires, no lamp, gas, fire, electricity, nor any risky ingredient to cause fire.

3d. It can be operated all year round, because there is nothing to get out of order.

4th. The brooder warms the chicks all over their bodies, and it can be placed in the open air, giving the young ones the much needed opportunity to run over the land.

5th. There is no odor to cause the death of chicks, nor any possibility for them to smother each other.

6th. It is a cheap plan for a housewife of moderate means to raise hens, ducks, geese, turkeys; and children can manage it as well as adults.

THE PATENT RIGHT

Possessing my apparatus, my first business was to ask of the American and European Governments the protection that the law gives to inventors, etc. In granting me a patent every one who has seen my apparatus has immediately recognized its importance, and the benefit each might derive from it.

I have been advised to sell my patent to a company so that I might at once realize a large fortune, but I prefer to remain the sole owner, fearing that once the apparatus is spread over the country our poultry and eggs would decrease in value in consequence of there being too large a quantity of poultry thrown on the market. Several of my friends have tried to dissuade me from this, and a gentleman of some celebrity and of great talent made use of these words: "If I had discovered this ingenious idea I would esteem myself happy to leave it to my contemporaries as a souvenir of my passage on the earth." I replied, if your name was not already surrounded with glory I would propose that you add yours to mine. You have witnessed my trials, disappointments and hopes, and have not only consoled me at times but encouraged me to try again, and this share is only your right. He refused this offer and said if I would sell my apparatus he would buy one. Two days later I sent him one, begging him to accept it, being the only one that has left the Gallinoculture Institute and instead of sending it

to his country seat he has it in his office for exhibition and takes great pleasure in showing it to his friends. I will not divulge his name—not wishing to follow in the steps of a great number of venders who fill their prospectuses with honorable names it is true, but who, have no interest in the affair, and far from being satisfied with the merchandise sent them, perhaps are only to be pitied in having just cause of complaint. A good thing recommends itself, and there is no occasion to use any humbug to make it sell, and I wish it particularly understood that I desire the welfare of my friends and neighbors, the farmers of these United States, and work as willingly for their benefit as my profit and any reasonable person can clearly see that the profits I derive from this book will never begin to pay me for my time, money and labor bestowed on this patent, but expect a great deal from the interest the public will take in a business so simple and so interesting and offering such good returns for the time and attention bestowed upon it and especially when a thing is really good the inventor generally begins to turn it to his own profit. But such is not my present desire. What I have done at our establishment with a great many of these apparatuses is to hatch and raise poultry of every kind—chickens, turkeys, ducks and Guinea fowls, and one reason why I have not delivered the apparatus to the public sooner, is that, as I before stated, I would not flood the market, and, to a certain extent, put an end to the demand for poultry and eggs; but now, from the reports and statistics received on the subject, I happily find myself deceived, and find that, notwithstanding the quantity raised, buyers at a fair price will always be found.

THE VALUE OF EGGS

In a work on poultry I find that in New York and Boston alone were sold \$6,000,000 worth of poultry, which exceeds the commercial value of all the swine and half the value of all the sheep, the entire value of the meat cattle, and over four times the total value of the horses and mules. One large hotel in Boston uses an average of one hundred dozen of eggs daily, and another in Philadelphia consumes one hundred and fifty dozen daily. The New York Evening Post subsequently set down the value of eggs and poultry at the enormous sum of \$265,000,000.

It is easy to understand that from such an enormous business there must be a great profit to those who busy themselves in the poultry business, and if it were possible for me to get at the daily sales, of which no account is taken, I am sure we should arrive at wonderful and fabulous figures; but although these United States are so rich in grain, mineral, lumber, and the different commercial productions, the first among which may be placed the raising of cattle, etc., yet they are obliged to send to Europe for a part of the necessary quantity of eggs to meet the demand, a thing almost impossible to believe, yet it is unfortunately but too true, and I could hardly believe it, until I had received it from the Hon. Ed. Youngs, Chief of the Bureau of the Government Statistics at Washington—several reports, which, unfortunately, are too sparsely scattered through the States—and one of these reports shows me that there was imported into the United States during a period of eleven months 5,025,958 dozens of eggs, being worth \$688,796, and during the same time a year later, 5,467,264 dozens, and worth \$732,234.

So it can be easily seen that there is no danger of overstocking the markets, and I firmly believe that the consumers would rather have their eggs fresh than coming from Europe, as the voyage would not improve their flavor. After having read these figures, one can fancy the astonishment of my friends, the readers, that so lucrative a business is not more generally followed and better managed. Why poultry does not take its place among other industries and occupy that rank which it ought to among commercial affairs is, that the thing is too simple; and if I were to tell a father with two sons to teach them a trade of some sort, he would very likely reply they may be doctors or lawyers, and if I were to ask him the question: "Have you any fortune? or, have your sons any disposition for those professions?" he would reply: "Not much; and I don't know if they are so inclined;" and suppose I hazarded the advice: "Have them taught the art of raising poultry," I should make that man an enemy, and he might ask me if I took him for a madman. Don't get angry, my friend, I might justly say, for it is not every one who can raise poultry with profit. Generally every farmer raises some poultry, and his wife and children attend to this little affair; he must go to the field and tend his corn, etc.; talk to him of these crops, it is all right; he may have a large barn to hold his crops, while he will have some old shed, dirty, etc., for his poultry, and they must hunt for their living, or at best, are only fed once a day. If you should visit any of the farmers, how seldom do you see a pail of water for the fowls? No, the thing is very rare and seldom the owner will spend a cent to build a fowl house; he would sooner put his money in the bank. Some will invest in railroad bonds that

traverse the wilds of this vast country and are fifty years before they pay any interest. Is it not so? While on the other hand his poultry might bring him in two hundred per cent.

Poultry has always been a source of revenue to the French people, as the following figures will prove: In France there are about 40,000,000 hens, valued at \$20,000,000. One-fifth are marketed yearly for the table, bringing about \$4,000,000; the annual production of chickens, 80,000,000, worth in the city markets \$24,000,000, and \$2,000,000 are added for the extra value of capons and fatted hens. The production of eggs is estimated at 40,000,000, making the total value of eggs, chickens, capons and hens annually sold, about \$80,000,000, or \$2.22 to every man, woman and child in France. The power to make much out of little, and to live frugally on small means and with limited resources to fall back upon, is the distinguishing trait of the French people and one well worth emulating. The eggs imported from France to England in 1874 represented a value of \$1,200,000 and from Belgium \$300,000.

Formerly our farmers have been wont to crown the wheat as king of the agricultural productions; in the South cotton is given that title and in some of the southeastern states tobacco is vested with kingly robes. But now conditions have changed and the patient, unassuming, oft-neglected, but always persistent hen has won the commercial race and the right to be crowned queen of the wealth producers, for over 70,000,000 pounds of poultry and almost 36,000,000 dozen eggs were handled by the transportation companies during last year, in the state of Missouri alone, the aggregate cash returns for which were \$8,298,232.

To more fully realize the importance of this "infant industry," compare its achievements with some others.

The gross value of Missouri's shipments of poultry and eggs exceeded the value of the combined shipments of wheat, corn, oats and hay during the same year.

Ask any thrifty housewife regarding the value of the quantity of poultry and eggs used in her family, then multiply that amount by the fourteen millions of families in the United States alone, and you will be astonished by the value of the great poultry industry. While some families will use but a small amount, many others use a very large amount of choice poultry production.

Their use is a question of advanced civilization and knowledge of the hygienic value of foods, as shown by the much greater use of poultry products in larger cities and towns.

Notwithstanding the enormous quantities of poultry raised in the United States, the amount is not enough for our consumers of them. The foregoing fact, and the more important one that the price for choice poultry is now higher than ten years ago, showing that the business is not overdone. The value of the poultry products in this country always increases, and for the year 1895 the value was \$343,000,000, taken at a value of fowls, 60 cents each, turkeys and ducks, \$1.

Consider for a moment whether these prices are not much lower than the families in and near to large towns are paying, and you will admit that the total value named for 1895 could easily be added one-half and still be conservative. It is a well-known fact that the demand for choice poultry increases faster than the supply.

THE SALE OF POULTRY

Many of our readers are compelled to sell their fowls and their eggs, through the medium of a commission house, therefore due care should be exercised in the selection of the same. In many places thoroughly reputable and reliable members of this class of traders can always be found, but if the reader is unacquainted with any, his local banker may be able to furnish him some particulars about the standing of the house, but he cannot guarantee whether the house is or is not inclined to be tricky, even though the same may have a bank account and pay its bills promptly, therefore we recommend to our readers to be particular with whom they deal.

As many of these houses will sell the hens and the eggs by the pound, the following table may be useful to our readers:

NUMBER OF EGGS NEEDED FOR A POUND

Light Brahmas and Partridge Cochins—Eggs, 7 to the pound; lay 130 per annum.

Dark Brahmas—Eggs, 8 to the pound; lay 120 per annum.

Black, White and Buff Cochins—Eggs, 8 to the pound; lay 115 per annum.

Plymouth Rocks—Eggs, 8 to the pound; lay 150 per annum.

Houdans—Eggs, 8 to the pound; lay 150 per annum.

La Fleche—Eggs, 7 to the pound; lay 130 per annum.

Creve Coeurs—Eggs, 8 to the pound; lay 140 per annum.

Black Spanish—Eggs, 7 to the pound; lay 140 per annum.

Leghorns—Eggs, 8 to the pound; lay 160 per annum.

Hamburgs—Eggs, 9 to the pound; lay 150 per annum.

Polish—Eggs, 9 to the pound; lay 125 per annum.

Dominiques—Eggs, 9 to the pound; lay 135 per annum.

Games—Eggs, 9 to the pound; lay 130 per annum.

Bantams—Eggs, 16 to the pound; lay 90 per annum.

COMMISSIONS VARY GREATLY

When eggs are sent to cold storage usually 35 to 50 cents per case of 30 doz. is charged for the season of six months, or 10 cents per case per month for short storage. In warm weather a charge is frequently made of 10 cents per case for candling, work which must necessarily be repeated in the course of a few weeks, unless the eggs are sold in the meantime. During the season of candling, the loss through bad eggs runs about one-half dozen per case, which would be called first-class.

PUBLIC ANXIETY

Hundreds of agricultural societies anxious to see their members adopt my plan, begged to exhibit my discovery at their annual Fair, I attended forty-five of them.

I was well rewarded for my trouble and the great outlay of money, not only for the medals, diplomas, and all honors I received, but having the great satisfaction of placing within the reach of thousands of poultry breeders and farmers an opportunity to increase their income in utilizing my discovery.

All the principal journals sent to our Institute a reporter who wrote long and minute articles describ-

ing my discovery, therefore I was obliged to give more permits to visit the Institute and it soon became very inconvenient to be incommoded every day by visitors, even the Sabbath not being respected, so I was compelled to strictly limit the time of showing my plan, therefore I sent a notice to the newspaper that Tuesday only the public would be admitted.

I sent an invitation to all the fancy breeders, many of them came over 200 miles; I decline to repeat the flattering compliments they paid to me, but I give in my catalogue several extracts taken from very interesting articles published by the most reliable newspapers well known by the public for being impartial and thoroughly competent to judge of the merits of my discovery, these articles proved very interesting to the public, if I am to judge from the thousands of letters politeness required me to answer, and it would require a book ten times as large as this to answer all the questions that were asked in these communications, and hence I am under the necessity of dilating upon many matters which to some of my readers may appear trivial. The information I have sought to convey will, I trust, be eminently practical though unadorned by any literary embellishment.

I think it will not be long before this state of things will change, for I find every day that the hatching and raising of poultry is receiving serious ameliorations. Already many people have adopted my system, not only in the United States, but also in Europe from where I get orders. The New York Sun some time ago had a long editorial in reference to artificial incubations, and mentioned a gentleman in New Jersey who has invested \$60,000 in the poultry business. The time is not very far distant when the capitalists

will seek to invest their funds in this business, the only one where there are no risks to run. Our farmers also will learn to employ their time in winter, I trust, and will find more than enough profit in the sale of their spring chickens to pay for the manure they will require in the culture of their fields for the ensuing year, and which I think they will allow is sufficient remuneration for the trouble they may have taken. The time will come when we shall see signs in all the cities, "Chicken Manufactory," and every family which has a house will raise its own poultry the same as it now makes its bread, butter and cheese. I know of a good many countrymen, who, I am sure, will not be sorry to give up their pork and beef.

Many of my readers may be astonished that the farmers have not thought of using manure for hatching out young chickens, since nearly 100 years have passed since Reaumur promulgated his discoveries to the world. Helas! Yes, it is true, but then you know it was such a simple thing and so easy to do that no one would bother with it, and especially as no one could be found to puff it, and nothing was to be made in giving it the publicity it deserved, whilst a machine with lamps (there was some chance of making a business of it with enormous profit for the maker) received its due amount of brag.

Chance, however, is sometimes the origin of many things, and now and then clears away the clouds that lead to fortune. I had just finished my experiments when I read in the "Commercial Advertiser" of New York, the following:

ARTIFICIAL INCUBATION

"A lady residing near the Sisters' Hospital keeps a half-dozen or more hens, and has been astonished at

the strange manner in which a nest full of eggs was hatched. A quantity of manure had been thrown from the stable, and yesterday the children heard young chickens in this pile. They at once called the attention of their mother to the fact, who, to solve the mystery, directed that the heap be pulled down. When this was done, a short distance from the surface a cavity was discovered in which were nine little chicks. The hen had managed to make her nest in the heap, and after laying eleven eggs, the opening had been closed by the stablemen piling on more of the cleanings from the stable. The warmth generated in the heap had incubated the eggs, and nine of the eleven hatched out. This may be a discovery which some one may turn to account."—*Paterson Guardian*.

WHO FIRST DISCOVERED THE PROCESS

I sincerely hope that all those who have fowls will not hesitate to hatch some eggs in manure; and as I am certain they will derive a handsome profit from doing so. Before concluding this little work I ask permission to give the biography of the Hon. M. de Reaumur, who was the first to make this great discovery.

René Antoine Ferchault de Reaumur was born at La Rochelle, France, the 28th of February, 1682. After having graduated at Bourges, his fortune allowed him to pursue the study of the sciences to which his inquiring mind led him. The early part of his life was given to the useful arts, and it is to him that France owes her manufactures of steel and tin. Opaque glass was also his invention, but the work that has rendered his name immortal is called "*Mémoires pour servir à l'histoire des insectes*," 6 volumes, 1734-1742.

These memoirs reveal in each page the exact and minute details of the caterpillar, moth, butterfly, grub, fly and bee.

He was still employed on his work when he met with an accident at his estate of Brémontier, in Maine, which hastened his end, and he died October 17th, 1757. He had collected a splendid assortment of insects which he left to the Academy of Sciences, of which he was a member. Reaumur also published works upon shells, upon the artificial hatching of eggs by heat, and upon the keeping of eggs by means of greasing them.

In 1731 he constructed a thermometer, to which his name still remains.

THE SORT OF MANURE—HOW TO USE IT

The manure to be used for hatching eggs or raising the young chickens must be taken from horses fed with grain, (the manure of a horse fed only on grass or hay having very little heat in it) and it ought to be several days or even a month, in the manure yard, and it might be advantageously mixed with that of the mule, which contains a great deal of heat; this is not actually necessary, but as some of my readers no doubt will have mules, especially in the South, I have thought it necessary to mention this fact.

The manure ought to be pure, that it to say, any extraneous matter such as old rags must be shaken out so that nothing but the fine straw and the dung well mixed, is used. That which has lain all the Winter in the yard and become frozen and full of snow and ice, cannot be used with success unless the sun has melted them and the heap has been turned over. That taken from the middle of the pile where it is not frozen, may of course be utilized.

For artificial incubation the manure must be handled with as much care as a skillful gardener uses in mak-

ing a hot bed for his plants, and the building best suited to place the apparatus in is one in which the air circulates freely, and without a boarded floor; the temperature ought to be as near equal as possible, a building covered with glass being consequently unsuitable, that is to say that when a heap of manure is placed in such a building, the sun shining on it increases the heat considerably, while at night the temperature is lowered several degrees, thus causing endless trouble in regulating it. This difficulty I experienced at the Albany Fair where the Agricultural Society placed at my disposal their splendid Floral Hall, built entirely of glass, but I found the heat 120 deg. during the day, and hence it became no easy matter to maintain my apparatus at the desired temperature. The Society therefore erected a special building into which I removed my apparatus, this considerate act of kindness relieving me of all further anxiety in this direction. One must therefore have as plain a building as possible, for no other heat is required than that derived from the heap of manure, and that is even more than sufficient, for it will retain its temperature for forty or fifty days without varying a great deal, and the reader, who wishes to try my system, can place in the middle of such a building a heap of manure, six feet square, taking the precaution of forking it over carefully and handling it as before mentioned, being careful not to tread on the manure. It ought to be packed closely, but not trodden down, and when the heap is eighteen inches deep the hatching apparatus is placed in the middle; a barrel or a box of any description will answer, but the wood must not be too thick (a flour barrel is as good a thing as any) and there must be a cover on it and a system of

ventilation arranged to regulate the heat, after which it must be carefully covered with manure to make the heap square. After two days one ought to have about 120 deg. of heat, but it would be imprudent to place the eggs in the receptacle or box with which one wishes to make the experiment either of hatching or rearing the chicks, but care must be taken to diminish the heat to 100 deg. or 102 deg.; then the eggs may be placed in it and kept at 102 to 105 degs., care being taken to take them out every day to cool, and to exclude frost from the building, for the sudden change from hot to cold would kill the bird in the shell, but still they must have air, for air is the life of the chick, and consequently if the raiser finds the hatch amounts to only five or six out of thirteen or sixteen eggs placed under the setting hen, the fault is generally from the close setting of the hen, and this malady is such that it frequently happens they die on the nest.

It is therefore necessary that every one who makes a business of poultry raising should take the setting hen off her nest and feed her or turn the eggs. The feeding should not take longer than twenty minutes. It being proved that air is indispensable, one must therefore give it to the egg while in process of hatching, the same as if it were covered by the hen. Artificial hatching is only imitating nature, and therefore it is important that whatever nature requires must be imitated in the minutest details, no matter how simple it appears, for often on what appears to be but a trifle, success depends. I cannot too strongly recommend those who make a business of poultry, to entrust to only one person, and that a reliable one, the management of the apparatus as well as the care of the poultry. No other business more imperatively

demands the services of an employé in whom implicit confidence can be placed. During my residence in London I have frequently known capitalists engaged in the raising of poultry. I visited one fine establishment and refused the management of it because it was too difficult to oversee the hands employed, and after spending more than \$200,000 the stockholders withdrew. I therefore say to all those who wish to engage in the poultry business that they ought especially to work themselves, if not, success is impossible, for there are a hundred indispensable points, the non-observance of which will inevitably entail failure.

THE BEST BREED

I have frequently been asked what breed of hens is the best? This question is very difficult to answer, from the fact that all depends upon the purpose for which they are kept, whether for profit or pleasure. To those who keep them only for pleasure I do not wish to give any advice, as taste and color are a mere matter of fancy, but to those who wish to make money out of them I would say that in a warm climate and where eggs are the main object, I would prefer the Leghorns, as they are good layers but bad setters, and even to those who wish to use incubators, the eggs of these hens give chickens difficult to fatten, and they never weight enough, and as poultry is sold by weight, there is nothing to be made by them; but if, on the contrary, it is desired to market them, the White Brahmas or Buff Cochins should be selected, which give nice chickens, easily raised and readily fattened. There are certainly other excellent varieties, but the two that I have recommended are my choice, and I only state what my long experience has proved. I

have had some of every desirable sort, and I am certain all the raisers of poultry are of my opinion.

One of the most essential points is to feed hens with the least possible expense, especially where a large number is kept; this is a very important point, and the poultry raiser will do well to keep it steadily in view. The farmer who has fifty or sixty hens is satisfied to throw them a few handfuls of corn every day, but when one makes a business of it, it becomes a much more serious affair. I cannot too strongly recommend as food, the refuse from the hotel kitchens for laying hens, but it should never be given to the young chickens, there being nothing so bad as meat for them. I was foolish enough to follow the advice in a contrary direction, given in a work, the name of which I withhold out of politeness, but I paid dearly for it in the loss of an innumerable quantity of chickens. Meat does not digest quickly enough and cannot find a passage as quickly as meal; the consequence is, that after a few days the chickens die. This great mortality caused me to make many researches in other books; finally I wrote to several newspapers in Europe, and one of them sent me the following:

DISEASED FEET IN CHICKENS

Under the above heading we find in the London "Fancier's Gazette" of Nov. 6, a communication from M. Leno, an old and somewhat famous breeder of chickens, in which he says:

"During the last twenty-six years I have been solicited by near neighbors to unravel if possible, the mystery of diseased feet in chickens, which included young turkeys, pheasants and poultry. I found the toes of many completely eaten off, some crumpled up with sores, others with toes turned under the foot, and of course many deaths, as they could scarce move

about. I made the most careful inquiries of the several individuals as to the food given to them, and in every case I found a large quantity of animal food was being used. I ordered the meat to be discontinued at once, the result of which was that not a single bird fell with the disease that had not been fed with the meat, proving to my mind that the disease was caused through the too liberal use of animal food; and the other cases I inspected were similarly affected to mine.

"My opinion, founded on long experience as regards so-called cramp in young pheasants and poultry, is that it is caused by a too bountiful supply of animal food, and not by wet ground. I know many game and poultry rearers will believe me to be on the wrong scent; but when so-called cramp makes its appearance, reduce the quantity of animal food and note the result. I am not against the use of animal food, for I know, if judiciously and sparingly used, it is a very great help; but overdo it, and the result will prove very disastrous."

INFECTIOUS WATER FOR CHICKENS

Several persons having poultry keep pigeons also. This practice is prejudicial to the hens, etc., and as it is imprudent not to take every precaution, I will quote one case. A resident of Staten Island called upon me and requested me to pay a visit to his poultry yard; all his stock, he said, were sick, and the mortality very great. I felt it to be my duty to assist him with my experience, so I went to his house, which I must say was kept in anything but a proper manner, and I found he had seven or eight hundred hens of different kinds, and very badly chosen were they. After having examined thirty or forty of them I told this unfortunate breeder to change the water in the drinking fountains. He took the water from a cistern and I asked him where the water came from that filled it, and he said from the roof of the hen house. Now as there were

more than one hundred pigeons on it continually, it was apparent that every shower of rain washed their manure into this cistern, and that the water he gave his fowls contained a strong acid and was acting on them as a slow poison. I ordered a purgative, pure water and to change the food, and the following week the sickness had disappeared; therefore if you keep pigeons give the fowls water from a well.

CONDITION OF EGGS TO BE SET

Many persons believe every egg contains a chick, those who do so, labor under a great mistake. If I wish to offer a friend a pure egg I would give him one from a hen fed on corn and from a yard where no roosters are kept; but if, on the contrary, I wish to hatch them, I would take them from one where there were several and which were fed on hotel refuse, especially in the Winter season, for then only a few are fit for hatching, for two reasons. 1st. At that season nature is sluggish. 2nd. That the hens remain nearly all day on the roost and the roosters have not the same chance as when they are running in the yard. Every one who has the requisite knowledge to raise poultry with profit, takes the precaution to double the number of the roosters that run with their hens in winter, and every day to drive the hens out of the house to pass a few hours in a yard or piece of ground near the poultry house, covered in with glass so that the sun may enter. In ordinary calculations twice two makes four, except in the poultry business, when nearly always twice two only make three; that is to say, any one having one hundred hens will find they give them a profit, but if they have two hundred they will find generally a loss unless well posted in this matter. In keeping hens

there is a right way and a wrong one, and very few know the right one; the art of raising poultry with profit depends on a number of little things, essential points, which put together, lead the raiser either to ruin or a fortune, and I hope that my experience will be of use to others, for I firmly believe few are disposed to make the sacrifice that I have, and the reader will find in this little book all that I have been able to collect in the way of valuable information from the principal breeders and authors, but I don't think any of them have been able to discover a way to hinder the hen from setting, at least. With my system they set only a few days, and this is the rational of the process.

HENS SETTING ONLY SIX DAYS

Having always eggs in my apparatus, directly a hen wishes to set I give her those taken from the apparatus and which in consequence have passed thirteen or fifteen days in incubation by the heat of the manure, therefore the hen has only to finish the hatching already begun. I then leave her ten days with the young chickens. After this time she is put back again in the poultry house; hence, instead of losing three months of her laying she loses only fifteen days, and for those who have a great many hens this is of great importance. The chickens are then placed in the raising department where there are hundreds of young ones of every age. To lead a regiment like this to the fields, I placed in the poultry house a mother selected for the purpose; she guarded all my ducklings, chickens, young turkeys, every variety of breed and color, and nothing was more pleasing than to see her, a fine White Brahma walking about with four or five hundred little ones, and when she rested

one might see her surrounded like a general with his staff, and at night she stretched her wings, so ambitious was she to try and cover them all; but the greater number went of themselves under the artificial mothers. I therefore advise all those who raise poultry artificially to follow this plan, and if unable to get so good a hen, when the chickens are two days in the artificial mother, to place two or three young chickens a little older with them, and whether they come from the mother or the artificial one, these will act as schoolmasters, and will teach them to eat and drink and run in the yard. One ought never to let a hen and her young ones, or those out of the artificial mother, go out until the sun has dried up the dew with which the grass is covered every morning. Another point to which I would call attention; is the method of discovering whether an egg is fertilized or not; people generally take the egg to a candle either before or after it is placed under the hen; some place it in a bowl of water and say that if it sinks it is impregnated, and if it swims, it is not. The surest way is this:

HOW TO TELL WHETHER EGGS ARE FERTILIZED

After the eggs have been hatching five or six days either under a hen or in an incubator, take a lamp into a darkened room and hold the egg before the light; if it is fertilized it will show a small black speck, and in turning the egg round with the fingers you will perceive that it moves. (In about twelve hours can be discerned the commencement of organization in the gelatinous spot called the germ, which is always in the upper part of the yolk whatever the position of the egg. At the end of the first day the head and the back bone can be distinguished; at the end of the second

the vertebral and the heart; the third contributes to the development of the heart and the breast; the fourth to that of the eyes and liver; on the fifth the stomach and kidneys are discernible; the sixth the lungs and skin; the seventh the intestines and the beak; the eighth the bladder of the gall and the verticles of the brain; the ninth the wings and legs, and on the tenth day all the parts which are necessary to complete the bird are in their place, and are developed and attain during the following days their proper size.) If on the contrary this speck is stationary, that is to say stuck to the shell, the chick is dead; all eggs that have not this black speck are clear and still good to eat. You can nevertheless assure yourself of this fact by breaking two eggs into a cup; that with the black speck will show a little blood, while that without it will not have it. This black speck will be much larger when the roosters are in good condition. It often happens that eggs are left in the hen's nest and consequently are set upon several days and if these eggs are kept a day or two before being placed to hatch, this interval is sufficient to kill the chick which has already begun to form; therefore the eggs ought to be gathered twice a day from all the nests, care being taken not to shake them. Twenty days after being laid an egg cannot be put to hatch with any certainty of success. The duration of time is the same for hatching eggs in an incubator as under the hen, thus—hens' eggs take 21 days, geese 32, ducks 28, turkeys 29, Guinea hens 27 and pea hens 30.

A VERY CONSERVATIVE RESULT FROM EACH HEN

A savant has said that to eat an egg is like eating an unripe fruit, and I am going to try and demonstrate

what truth there is in his reasoning. Let us take for example the hen; she lays, we will say, on an average, 130 eggs annually; she sets on, say 12, and hatches out of this number, seven or eight chickens; there remains 118 which are not sat upon and in consequence have not become flesh to eat, if the raiser has sold these eggs at two cents each, it is because he did not know how to convert them into chickens. Now let us see the difference as a business transaction: If all the eggs were turned into chickens instead of being sold as eggs at two cents each, it being understood that the hen sat upon 12 eggs, we must only place the figures upon those that were turned into poultry; thus 118 eggs at two cents each give \$2.36. Now let us suppose them hatched out by means of an incubator; there would be about 100 of them that would reach the market; allow for cost of feeding them, \$10; one cannot of course expect that they would all live so we will allow 10 per cent for deaths, etc., there still would remain 90 chickens at 50 cents, each, making \$45.00, from which sum we must deduct their value as eggs, \$2.36, food and labor, etc., another \$10.00, making a total of \$32.36 to be deducted, leaving over \$32.00 that a hen might be made to make as profit. The reader may perhaps be surprised in looking over these figures, and perhaps more astonished that we have not a larger established poultry business; but to arrive at this it will take a longer time than one would suppose. For more than twenty-five years meat might have been imported into England, and yet it is only recently that a good method of preservation has been discovered. I really hope that in this century they will call us savages for having compelled a hen to set 21 days on her eggs just to give her 102 deg. of heat; it

would certainly be more humane and advantageous for the raiser to let her lay eggs.

HOW TO FIND OUT A ROOSTER'S AGE

A poultry breeder knowing his business is aware that a hen cannot lay a well fertilized egg if the rooster is too young or too old; therefore, fearing to loose the sale of same, its owner may hide its age, but the reader can find it out by the following calculation; the rooster's owner himself doing the figuring.

Tell him to put down the month in which the rooster was hatched out (for instance, January is the first month), then to multiply it by two, then to add five to the total, then to multiply it by fifty, then to add the rooster's age to the total, then subtract 365, if the total would not allow him to do so, the rooster is not two years old, but if he can do so, tell him to add 115 to the balance and to add it, then ask him to tell you the amount he has; the first figure will give you the month in which the rooster was born and the last one his age. A good rooster must be between two and six years of age.

During my absence from the Institute, The "American Agriculturist's" representative visited the establishment. In his next issue, No. 354 of its new series, this paper gave a truthfully illustrated description of my apparatus, the reader no doubt will be pleased to read the following which is an exact reproduction of what this valuable paper said:

"Of late years there have been many efforts made to perfect a method of artificial incubation, and to get rid of the hen, which unfortunately is too fussy and too slow for our advanced ideas. Now that poultry bears so high a price, and young chickens for broilers are worth

more than full-grown fowls, it is very desirable to have some way of improving upon the slow and unsatisfactory methods provided by nature. The most promising of all the methods, old or new, with which we have become acquainted, is the one here illustrated and described. It is the invention of Mr. A. Corbett, in which the old-fashioned heating material, horse-dung, is used. The apparatus consists of a rounded box (Fig. 1), made of laths, having a door in the front and a movable cover at the top, in which is a ventilating flue having a graduated opening closed by a slide. This is placed in the center of a pile of horse-manure, which raises the necessary heat in a short time. When this has occurred, the eggs, arranged in wire sieves or frames, are placed in a box, and the cover is put on. The heat is carefully regulated by the ventilating slide, when shown to be necessary by a thermometer laid upon the eggs.

When the chickens appear, the mother is made ready for them. (Fig. 2.)

This is a box exactly the same as the incubator, but provided with a horizontal disk, covered on the under side with a piece of sheep-skin from a long-wool sheep, and arranged to be moved up and down by a screw. The manure is heaped partly around the box, to provide the needed warmth, the door is let down for a pathway in and out for the chicks, (see Fig. 2), and in this they are placed as soon as ready to be removed from the incubator. After having been fed a few times the chicks will learn to come out from beneath the wool to feed, when the platform is tapped. Mr. Corbett has been very successful in using his apparatus, and when visiting his establishment, we saw the proof of his success.

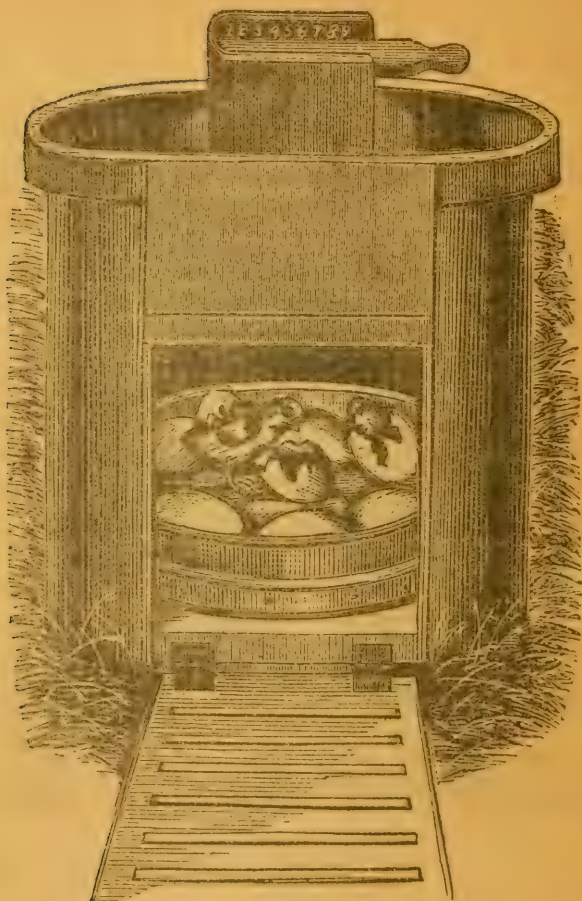


FIG 1.—PROFESSOR CORBETT'S INCUBATOR

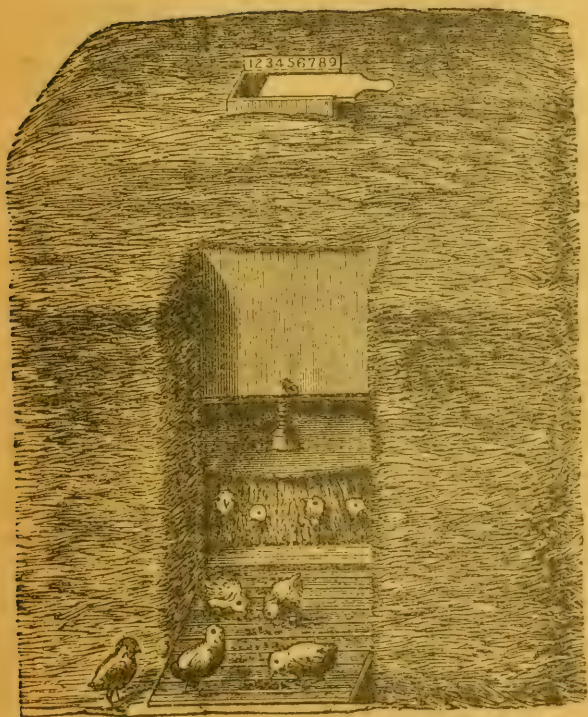


FIG 2.—PROFESSOR CORBETT'S ARTIFICIAL MOTHER

TO THE LADIES

The husband generally, is supposed to be the bread earner of the family, and I now call your attention seriously to the following:

Every mother is more or less troubled for the future welfare of her family, and I would not wish her to lose sight of this fact. I have known many families who were very comfortable during the husband's life, but at his death were placed in straitened circumstances, if not in actual poverty. What business can the mother follow if she has been the wife of a merchant's clerk and able to keep her own servants, but the requirements of position have prevented her from saving anything, and whenever misfortune comes it is necessary to have the means of living and educating the children? How much better is it to anticipate such a crisis and to begin as soon as possible to have a certain income? Engage in the poultry business, and when you have sold the first \$500 worth your fortune is made; for should misfortune arrive all that you have to do is to increase the number of your hens.

However grievous the loss of the husband may be, and whenever it may happen, you may be sure he would bless you for securing the welfare of his children and driving that gaunt dog, poverty, from the door, and even should not death, but commercial panics, which are a most frequent cause of misery, cause a change of living, your poultry will supply all the necessaries of life, and I should be happy if I knew that this advice had been followed.

Already has the example been set in Europe by several ladies, who certainly would never require assistance from the raising of poultry, and yet are not ashamed to acknowledge that they do receive a large

profit from this pursuit, and have great pleasure and satisfaction in devoting their time and intelligence to it.

The late Queen Victoria, of England, had a splendid poultry house and spent numerous days in studying with great attention, the different remedies for ameliorating the condition of poultry and we are indebted to her for the system of feeding which she has pursued for young turkeys, so as to avoid the great mortality that takes place when they get the red. This receipt has been regarded by those who are engaged in turkey raising as a very superior remedy. But a long time before some people had presented to her Majesty the discovery of this receipt, we had made use of it and recommended it already. Further on more explanation will be found.

We find also that the example set by Queen Victoria has been followed in France by the Countess d'Alber-tas and the lovely Marchioness Bugean de la Tour de Pin, Antoine Passy, Cora Millet, Marie la Barriere de St. Polen Garret, etc. Madame la Baronne de Leinas, widow of an officer without fortune, and his children, became immensely wealthy in raising poultry.

\$500 YEARLY PROFIT WITH TWELVE HENS

I have often been asked, what profit can be realized with a few hens, by persons who use my discovery: it is very difficult for me to give an exact figure, because that depends a great deal upon the aptitude of the person and the climate where the business is carried on, nevertheless, my long experience enables me to figure out what profit twelve hens will bring.

A two year old hen will lay yearly about 130 eggs, making for twelve hens 1,560 eggs now we must deduct

10 per cent for eggs not fertilized, leaving 1,404 eggs to be hatched. In raising the chicks 10 per cent are to be deducted for deaths, which will leave about 1,300 chickens, which can be sold at 40 cents a head, this will leave over \$500, not deducting the cost for feeding them, which any business person will do at trifling expense, and those who can reach the consumers will easily sell the spring chickens at 50 cents apiece.

RECEIPTS TO COOK CHICKEN IN ORDER TO PLEASE THE EPICUREAN'S PALATE

Stuffing—Moisten a cupful of bread crumbs with a teaspoonful of melted butter; season highly with salt, pepper, thyme. Chestnut stuffing is delicious. Shell a quart of French chestnuts. Put them in hot water and boil until the skins are softened; then drain off the water and remove the skins. Replace the blanched chestnuts in water and boil until soft. Take out a few at a time, and press them through a colander or a potato press. They mash more easily when hot. Season the mashed chestnuts with a teaspoonful of pepper, a teaspoonful of salt, and a teaspoonful of butter.

Giblet Sauce—Boil the giblets until tender; chop them, but not very fine; add a teaspoonful of flour to the pan in which the chicken was roasted; let it brown, stirring constantly; add slowly a cupful of water in which the giblets were boiled, season with salt and pepper; strain and add the chopped giblets; serve in a sauceboat.

Boiled Fowl are Savory. Truss the chicken firmly and boil until tender. Take the stock in which it was boiled and strain it through cheesecloth. Thicken with flour and season. Capers may be added to it if desired. Serve the chickens with a border of boiled rice or macaroni.

Fried Chicken—Cut a tender chicken in pieces, dip the pieces in water, sprinkle them with salt and pepper, and roll them in flour; saute them in a table-

spoonful of butter, browning both sides; then remove and add to the pan a tablespoonful of flour; cook it for a minute without browning, stirring all the time, and add a cupful of milk or cream; stir until it is a little thickened; strain, mix into it a tablespoonful of chopped parsley. Place the sauce in the platter and arrange the chicken in it.

Chicken a la Josephine—Clean, stuff and truss a pair of chickens, as for roasting. Dredge well with salt, pepper and flour. Cut a quarter of a pound of pork in slices, and put part on the bottom of the deep stewpan, with two slices of carrot and one large onion, cut fine. Stir over the fire until they begin to color; then put in the chickens and lay the remainder of the pork over them. Place the stewpan in a hot oven for twenty minutes, then add white stock to half cover the chicken, and a bouquet of sweet herbs. Dredge well with flour. Cover the pan and return to the oven. Baste every fifteen minutes, and after cooking one hour, turn over the chickens. Cook, in all, two hours. Serve with Hollandaise or with the sauce in which the chickens were cooked, it being strained.

Chicken, Baltimore Style—Split a small young chicken down the back, as for broiling; remove the breast bone and cut off the pinions. Cut into four pieces; dredge with salt and pepper; dip them in egg and fresh crumbs. Place them in a pan, and pour over each piece enough melted butter to moisten it; then roast in the oven eighteen to twenty minutes. Make a cream sauce, taking one cupful of Bechamel sauce, and add to it a half-cupful of cream and a half-tablespoonful of butter. Pour this sauce on a dish, and place the pieces of chicken on it. Garnish with crisp bacon and watercress.

Curry of Chicken—One three-pound chicken, three-fourths of a cupful of butter, two large onions, one heaping tablespoonful of curry powder, three tomatoes, a dash of cayenne, one cupful of milk. Cut the onion fine and cook in the butter. Stir all the while until brown; then put in the chicken, which has been cut in small pieces, the curry, tomatoes, salt, and

pepper. Stir well. Cover tightly, and let simmer one hour, stirring occasionally; then add the milk. Boil up once, and serve with boiled rice.

Chicken Souffle—One pint of cooked chicken; one pint of cream sauce, five eggs, one teaspoonful of chopped parsley, one teaspoonful of onion juice, salt, pepper. Stir the chicken and seasoning into the boiling sauce. Cook two minutes. Add the yolk of the eggs, well beaten, and set away to cool. When cold, add the whites, beaten to a stiff froth. Turn into a buttered dish, and bake half an hour. Serve with cream sauce. This dish must be served at once.

Chicken Chartreuse—Mix one cupful of cooked chicken minced very fine with one teaspoonful of chopped parsley, one-half teaspoonful of onion juice, one-fourth teaspoonful of salt, two tablespoonfuls of tomato juice, one beaten egg, a dash of cayenne. Grease well a pudding mold; line it one inch thick with boiled rice. Fill the center with the chicken mixture, and cover the top with rice, so the chicken is entirely encased, and the fold is full and even. Cover and cook in the steamer for forty minutes. Serve with a tomato sauce.

Chicken loaf may be served for luncheon with a crisp salad or for Sunday night supper. Boil a fowl until the meat falls from the bones. Strain, and put the liquor again in a saucepan; reduce it to one and a half pints, and add one quarter box of soaked gelatine. Lay a few slices of hard boiled egg on the bottom of a plain mold; fill the mold with alternate layers of white and dark meat of the chicken. Season the liquor and pour it over the meat in the mold, and set it away to harden; it will become a jelly.

PRACTICAL RULES ACQUIRED BY TWENTY YEARS' EXPERIENCE

A few rules applied to the management of laying hens will insure a full supply of eggs throughout the year. But the small number of rules and their simplicity makes it imperative that they be understood and applied.

Hens require some care and attention. Unless their owner is willing to see to his hens he had better not have them.

1. Hens must have comfortable and convenient quarters in winter. Most people keep too many hens for the accommodations they furnish them. Hens are naturally active animals, and when confined in winter quarters require plenty of room. Fifty hens and five roosters, of all ordinary breeds, should have a house 24 x 16 in the clear, and 10 feet high in the clear. This will allow about 70 cubic feet of space for each fowl, which is little enough. No class of animals is so susceptible to the ill effects of crowding as the feathered class. Hens will not lay when too much crowded, nor will they remain healthy long if too many are kept together. The building should be well ventilated by chimney without admitting any gusts or draughts of wind. It should face the south, if possible, and have several windows in front. Where the weather gets very cold it will be well to have the whole front glazed and have a stove inside. Hens cannot lay unless they are kept comfortable, and when the temperature falls

to 10 deg. or lower, they require a little artificial heat. This heat must be carefully managed; a little fire only should be kept, and it should be as steady as possible. Uniformity of temperature is what is wanted. The houses must be kept clean and neat. The floors should be swept every day, and be dusted over with dry earth, ashes, chaff, short straw, or litter of any kind that can be easily moved. Every hen house should have plenty of suitable roosts. There should be a shallow box or bin in one corner—a sunny corner is best—containing dry earth, ashes, chip-dirt, or a mixture of them, for the hens to wallow in. They enjoy their bath in winter as much as in summer. Where oyster shells cannot be easily procured, there should be a box containing gravel within reach of the fowls. A sufficient number of nest-boxes with glass nest eggs in them, several shallow vessels for water, and a feed trough will complete the necessary outfit for the hen house. A very important adjunct to the hen house is an open shed where the fowls can stay at pleasure when the weather is not too cold. Such a shed should protect the hens from the prevailing winds.

2. When the house with all the necessary fixtures is ready for the stock, the next consideration is to have the right breed. Almost any breed will do tolerably well with proper usage; but there is a great difference in the laying qualities of fowls. Under the same conditions, some breeds will lay twice or thrice as many eggs in a given time as others. As a rule, the smaller breeds are the best layers; and of the smaller breeds the Leghorns are preferable for several reasons: They lay a full medium-sized egg, are enormous layers, are docile and easily restrained, and have a yellow

skin. Of the large breeds the Brahmas are the best layers. A cross of Leghorn rooster on light Brahma hens will be satisfactory. When one wishes to make eggs a specialty, only pullets should be kept for the purpose, and the earlier they are hatched the better. Don't keep hens over more than three winters unless for some good reason.

3. When the proper accommodations are furnished and the proper breeds selected, the next and most important step is the feeding. Egg-production is hard work for hens, especially for those that are large layers. An egg is a highly organized and complex substance. It is for the most part composed of albuminous matters and oils and fats, together with fibrine, phosphorus, sulphur, iron, etc., in small but appreciable quantities. An egg is a potential chicken. The hatching process adds nothing to the contents of the egg, but only develops the chick from the substance already there. Thus, in an egg there is the material for bones, flesh, brain, nerves, feathers, and all the organs of life. Hence egg-production, considered physiologically, is an exhaustive process, when hens lay regularly and constantly. Furthermore, the shells of eggs are composed almost exclusively of carbonate of lime. When a hen lays freely she requires a supply of the raw material from which to secrete this carbonate, and it should be furnished to her at all times. Is it any wonder, then, that hens, as they are ordinarily kept, do not lay in winter? Their food must contain the materials from which they secrete eggs, or they cannot lay. Probably nine-tenths of all the poultry in the country is fed on raw, whole corn. We know that corn contains all the elementary substances the eggs do, but in very much smaller quantities, bulk for

bulk, and when a hen has no other food she cannot eat enough to afford the materials for an egg a day, or every other day. She will get fat and lazy, but cannot lay. Hence the necessity for a variety of diet. In summer, when at liberty, the hens can find the variety of food that suits them, and generally lay well without much care; but in winter they can get only what is given them, and generally they do not lay. But if we know the wants of the hens, and supply them, we may have as many eggs in winter as in summer. Poultry are large consumers of grass when they can get it, and to keep in good health they must have it, or its equivalent, in winter. Cabbages or boiled vegetables of any kind are good substitutes. Grass, if cut green and carefully dried in the shade, when cut fine and steeped a while in hot water, is nearly as good as green grass, and is eagerly eaten in winter. Besides grass, or its equivalent, we must give a supply of lime. Oyster shells, when they can be had, are the most convenient; when they cannot be had, ordinary stone lime from the kilns will do as well, after it has been slaked, but gravel must be supplied with the latter form of lime. Domestic poultry must be classed among the omnivorous animals. There is nothing that can be eaten that a hen will not eat if she can have it—any kinds of odds and ends therefore will not come amiss—and much refuse matter, that would otherwise be wasted, may thus be turned to good account. Hens are very large consumers in proportion to their size, and scanty feeding in winter will not do. They should have as much as they want to eat and as often as they want it, especially when they are laying well. They should be supplied with animal food in some form—offal meat, cracklings, chandler's

scraps, sour thick milk, etc., will give the necessary supply.

It thus appears that an egg is a complex substance; that it is composed of the highest products of secretion; that egg-production is an exhaustive process to the hen; that to produce them in large quantities we must supply the proper variety of diet, and plenty of it; and to keep up the health and strength of the hens they must have green food and animal food in winter.

I have made out a bill of fare for my hens, based on physiological principles, keeping in view the composition of the egg itself and the health and comfort of the hen. I will not occupy space in showing why this is in accordance with theoretical principles or analytical results. I do not claim that it is the best or the only way to feed hens, but it has answered so well with me that I do not know how to alter it for the better.

This is how I feed: Their morning feed consists of cracked (very coarsely ground) corn, wheat, oats, or corn and wheat bran, scalded, and fed warm in a trough. This is given them as soon as they can see to eat. As soon as they are fed I break up a pound of oyster shells for thirty-five heads. Then they have fresh water from the pump as much as they will drink. Fowls often suffer for water in winter. After their breakfast I give them about a pound of scraps or cracklings from the Chandler's shop. This is broken in pieces with a hatchet. It furnishes animal food and is cheap; I give two or three quarts of thick, sour milk every day, with a handful or two of wheat bran stirred into it. Besides this, I feed some cabbage, or turnips, or potatoes, every day. At noon they have a little oats, or corn, as the case may be, and fresh water again, in clean vessels. At night, before roosting

time, they get as much whole corn as they will eat, and fresh water again. I make it a rule to give as much as they will eat. A hungry hen will not be a laying hen.

The greatest regularity should be observed in feeding and caring for flocks. Have a regular time for all the different operations, and the hens will become as methodical as their keepers. Eggs should be gathered punctually twice a day, or oftener in very cold weather. The morning feed should not be made too wet, and should not be given too hot. In very cold weather it is advisable to put a little cayenne pepper and a sprinkle of salt in their morning food. Besides the above enumerated articles, the hens should have all the scraps from the table. They are very fond of them, and will turn them to better account than cats or dogs will.

Let us recapitulate. Give your hens a reasonable share of your attention; furnish suitable accommodations; get and keep the right breed; save only pullets, the earliest hatch, for laying. Furnish as great a variety of diet as possible, and feed as much as they will eat. Give green food and animal food of some sort in winter. Keep the hens quiet and comfortable; don't allow them to be worried or frightened. Water is as important as food, and should be kept clean and fresh. These rules, intelligently applied, will secure an abundant supply of eggs at all times of the year.

CARE OF SETTING HENS

Ought hens to set by themselves and apart from other setters? This question is one to be answered rather from the standpoint of the convenience of the breeder than from any other. No doubt hens, if left

to suit themselves, will choose a nest in some solitary corner; but the habit is not one that is acquired by reason of any advantage to the constitution of the chicken, but from a dread of enemies. In the case of quiet stock, such as the Brahma, there is no need of separating the setters, if at all inconvenient for the attendant. On the other hand, where many setters are together, some extra care is necessary in arranging the nests so that every hen will know her own. The nests must be scattered widely about the apartment, for it will never be found that the hen which should occupy a nest in the upper right-hand corner of a room has deserted it for one in the lower left-hand corner. Also, if the nests look very unlike, the birds will observe the distinction. The difference between a box open at top and a barrel turned on the side, is palpable enough to the dullest setter. In our modern fowl houses, where love of order prevails, the nest-boxes frequently look as much alike as two peas, and in that case wisps of straw or boughs of evergreens may be fastened in the immediate vicinity of a nest to enable the occupant to know her own. This, of course, must be done before the fowl has laid her laying out, so that the features of the vicinity may become firmly fixed in her "mind," for birds, as well as men, have minds.

The system of allowing each setter a separate apartment has decided advantages in many cases. It is always the best plan to follow, when the weather is warm enough, to give each setter a yard of her own, ten or twelve feet square to exercise in. By watching setting hens at feeds, when they have range and opportunity to follow their natural bent, it will be seen that they run around at a great rate, acting almost like

mad, and seem determined to get as much exercise as possible in the short time allowed them. In this way their bowels are kept in good order. But when setters, in order to keep laying hens from their nests, are confined in very small separate pens, they move around slowly, and instead of running and flapping their wings, they mope, and after merely satisfying their hunger, take to the nest again. Therefore, allow each setter as large a yard as can be afforded. If you attempt the plan of separate confinement, then you will escape the evil of two hens quarreling for the same nest; layers cannot drop their eggs in a setter's nest, and, at the same time, the incubating hens are allowed plenty of exercise.

HELPING CHICKENS OUT OF THE SHELL

It has been generally supposed that chicks that are shell-bound, or too weakly to get out without assistance, could not be saved, but an accidental discovery has put another face on the matter. Keep the egg in warm water (about 95 deg.) while the assistance is being rendered, and success may be hoped for. The shell must be cracked very gently, and the inner membrane very tenderly peeled off till the chick be at liberty, keeping all but the beak under water until nearly clear. The operation must be performed in a warm place, and tenderly, as if touching raw flesh; and it will be found that the water generally facilitates matters, liberating the membrane if glued to the chick, and enabling it to be separated without loss of blood. The latter occurrence, nine times out of ten, is fatal; but if the operation be completed without blood flowing, success may be anticipated and the nearly dead chick may be put by the fire in flannel, or under the

hen, if a quiet, good mother—under her at night, in any case—and next day may probably be as well as the others.

COOKED FOOD FOR POULTRY

An important question is the comparative value of raw and cooked food. That the latter is not natural is not a convincing reason, because to domestic animals the word has no application. They are in a peculiar condition in many respects, resulting from the long-continued influence of domestication. Besides, there is no objection to departing from the ordinary food of any animal, if the substitute can be shown to be as easy, or easier, of digestion. In reference to this point it must be decided by experiment.

Now, the experiment has been made over and over again. Swine have been fed with raw and cooked corn in equal quantities, and the result, tested by weighing, is from twenty to forty per cent in favor of the cooked article. Some keepers are accustomed, with their fowls, to boil a part of the corn in the kernel, and they do well. However, it must be said that they soon tire of it, and cannot be induced to touch it if raw corn can be had. The food is also sometimes steamed.

However, sometimes raw food is better. The corn may be boiled upon the ear, thus saving the labor of shelling it. It is more economical to boil corn in the kernel than when ground, as there is saved not only cost of grinding, but some labor in the cooking process; for mush must be continually stirred, while corn in the kernel will not "burn down" if suffered to rest on a perforated plate for a few inches from the bottom of the kettle.

It is claimed by some chemists that the food value of certain articles is increased by cooking, increasing the actual amount of nutritious substances in them.

Another method of softening grains, sometimes employed, is fermentation, which turns the starch of the grain into sugar, changing it into a substance more easily digested. Brewers' grains are much given, but should be used only in alternation with whole grain, because they are too moist and purge the fowls. They are to be recommended in the rather rare cases—when costiveness is complained of.

KEEP THE CHICKENS GROWING

It is a mistaken policy to stint young fowls, for rich food, and plenty of it is what they need; there is no danger in over-feeding, if they are growing and have their liberty. Old fowls that have their growth and are shut up, can easily be fed too much, but do not fail to feed the young ones all they will eat. A good feed of whole grain of some kind, just as late in the evening as they can see to eat it, is one of the means of making fine stock. Also give them a plentiful breakfast of soft food early in the morning. Let no food lie on the ground, or anything that will sour; it will be very likely to make the little chicks sick. A few cents worth of food, given at the proper season to a fine bird, may make several dollars difference in the price when you come to sell. It takes a certain quantity of food to keep up the waste of sustaining animal life; so every ounce of food properly digested, in addition to this actual requirement, goes to increase the size of the fowl. Remember this, and never neglect the growing stock. Time lost here can never be regained. Neglect the little chicks, and you will

surely see the effects of the neglect in the mature fowl.

Artificial nest eggs may be prepared very simply by breaking a small hole in the round end of an ordinary egg, removing the contents and filling the shell with plaster Paris, sufficiently moistened with water as to be easily poured into the shell; after it hardens, paste a piece of white paper over the hole, or the hens will peck out the plaster paris and destroy the egg. It is easily made and will last a long time. It is advisable to always have such nest eggs, and fowls will not acquire the habit of eating their eggs; hens are also less liable to wander off and hide their nests when plenty of nest eggs are placed in the nests.

HENS THAT EAT EGGS

The best way to break hens of egg-eating is to break their necks, and re-stock with birds that have not acquired the habit. Fowls that are expert in egg-eating first attack the shell with their bill. If it is a thin shell a few strokes will break it, and the rest is an easy job. If, however, the shell is a thick one, they generally fail to break it with their beak; they then begin to scratch in the nest, and with their feet, throw the egg against the hard side of the box until it is broken. First of all, make hens lay hard-shelled eggs, so hard that they cannot be readily broken by a hen's bill. This can be done by feeding freely with slaked lime, ground or broken bones, oyster shells, etc. To prevent breaking against the sides of the box, the nests should be high and lined upon the sides with cushions filled with hay or other soft material. Their only chance then is that they may throw two eggs forcibly against each other. To prevent this take the

nest egg away and gather the eggs several times a day. It is a good plan to leave a few China eggs near the nest for them to work at, which will make their bills so sore that they will strike the real eggs with less force.

EVENING EXERCISE FOR YARDED FOWLS

During the summer, when fowls must be shut up on account of their roaming propensities, much of the ill effects of their imprisonment may be avoided if they are let out for a short period at evening. While out they may be watched, although there is little danger of their going into the garden, and they will find enough in the grass-plots to keep them busy. Indeed, it is surprising how beneficial this time of exercise is. The fowls, knowing that they are to have a chance to get out, are much more quiet during the day, and if regularity in letting them out and shutting them up be observed, they will return to their roosts without trouble. It is possible, also, that an hour at evening is nearly as good as a whole day, as far as the health of the flock is concerned; for, if there is any special article of diet needed, they will hunt all the more diligently. It is for this reason that they will prefer the grass to the plowed land. By such an arrangement as this, large flocks can be kept in good condition, although shut up through the year.

DUST BATH

By instinct all birds are taught the need of a dust or water bath for their well-being. They choose a sheltered and sunny spot of fine dry soil, in which they open their feathers and fill them with dust, which, applied often enough and in sufficient quantities, is death to all parasites which infest the plumage or skin. As the domestic fowl is not a native of a cold

climate, it becomes necessary for us to supply the deficiency which exists during our winter season. This is readily accomplished by the dust box, which every one who has fowls should provide. Fine road dust, coal ashes, sand, pulverized loam or clay even, are all very good, and with a sprinkling of flour of sulphur, constitute as good a bath as can be desired. This should be placed in a sunny exposure of the room and kept dry and clean so that the fowls may enjoy its benefits when they choose.

When poultry is kept in a yard, it is best to dig up a small corner occasionally, to let them hunt for worms and beetles, and then sow it with oats, and corn and lettuce. They also want a dusting place. A box of ashes with sulphur intermixed is what they need for this.

CLIPPING WINGS

Clipping one wing of fowls to prevent their flying is a necessary operation sometimes, but never necessarily disfiguring. It generally is, however, since the farmer's shears almost always makes a clean sweep of all the quills, and an ugly wing is the result. Besides the ugliness, there are also other disadvantages in such a sweeping operation. A setting hen uses the outer end of her wing to retain the eggs under her in place, and those near the body protect the skin being torn by her mate's claws. The proper way is only to trim the feathers partly off with a pair of scissors, except about one inch at the end. It shows but little when the wing is closed, and does not disfigure the fowl, but lets the wind through, so as to prevent flying.

BREEDING AND MATING

Too many fanciers and farmers, otherwise earnest

in their business, are very careless concerning their fowls. Interbreeding certainly degenerates—particularly when so promiscuously permitted in a flock as is common. There are the same good reasons for making choice of the best-bred fowls as for making the same choice in other stock. For, while a prime breed is as easily reared, fed and housed as a poorer one, there is a decided difference in the returns in favor of the former. If properly cared for, we do not hesitate to say that fowls of superior order do yield the farmer even, the largest interest for the outlay he makes, of any other stock he keeps.

FOOD FOR SETTING HENS

The requirements of a setter differ from those of other hens. By their keeping quiet and without exercise, not much is required to sustain vitality, and that should be of such a nature as to digest slowly. For this reason whole grain is preferred, and corn is thought to be much the best. Soft food of any kind is soon digested, and the hen either leaves her nest very frequently or becomes very poor. The advantage of corn over other grain is that it is more oleaginous and so likely to stimulate the production of eggs, and being hard and compact it digests more slowly than other grain. A run upon the grass is also beneficial to setting hens. Meat should be avoided.

TURNIPS FOR HENS

In order to keep fowls in the best condition, green food is always important. With free range in warm weather, grass, etc., supplies this need, but in winter it must be furnished daily, and nothing is better than raw turnips, which can be cut open and fastened in a rack, or chopped fine and fed in a trough. They will

leave cabbage and "go for" turnips every time. Asiatics seem to consume more green food than the smaller breeds. It is even surprising how much they will eat of it, if given a full supply. A mixture of turnips, apples, and onions, chopped fine, is a savory mess.

THE NUMBER OF HENS TO A ROOSTER

Houdans, ten hens to one rooster; Creve-Coeurs, eight hens to one rooster; Buff Cochins, ten hens to one rooster; Gray Dorkings, ten hens to one rooster; White Leghorns, fourteen hens to one rooster; Spanish, twelve hens to one rooster; Brahmas, ten hens to one rooster; Hamburgs, fourteen hens to one rooster; Polands, twelve hens to one rooster; Game, ten hens to one rooster. With this proportion of hens to a rooster the vitality of the eggs will prove good, if the rooster is from 2 to 6 years of age.

POULTRY MANURE

Poultry manure, or hen guano, is worth, if kept under cover, almost as much in price as Pacific guano, which is selling at \$60 per ton. Hen manure, on the garden or farm, is worth \$50 per ton. To prepare it for use, mix it with soil, half and half; keep it until wanted. For corn, onions, and all vegetables, it is one of the best manures. No farmer, who wants to make his farm pay, should sell it for twenty cents a bushel. It is worth a dollar for his own use.

KEEPING EGGS FOR WINTER USE

To four gallons of boiling water add half a peck of new lime, stirring it some little time. When cold remove any hard lumps with a coarse sieve; add ten ounces of salt and three ounces of cream of tartar, and mix the whole thoroughly. The mixture is then to

stand for a fortnight before using. After immersing the eggs pack them as closely as possible. Thus treated, if put in when newly laid, at nine months they will eat nearly as good as though laid only six days, though of course not like new-laid.

A better but a little more expensive way of preserving eggs is recommended by the French. In eight ounces of warm olive oil dissolve four ounces of bees-wax; with this mixture anoint the egg all round, using the tips of the fingers or a rag. The oil will be absorbed by the shell and the pores filled up by the wax, and if kept in a cool place, the eggs after two years will be as good as if fresh.

GRAVEL FOR FOWLS

Granivorous fowls need the assistance of hard substances, such as stones, gravel etc., to digest the food upon which they live. This they are able to obtain for themselves, in most localities, at all seasons except in winter, or when confined in limited quarters. At such times they must be supplied with a liberal quantity of clean, sharp gravel or coarse sand. Young fowls of all kinds should have fine gravel or coarse sand constantly within their reach, of a size adapted to the capacity of their throats.

HOW TO FATTEN AND DRESS POULTRY FOR THE MARKET

Although the manner of fattening poultry may seem plain, yet there is, nevertheless, a right and a wrong way, a long and a short mode of accomplishing the object desired.

Never let poultry forage and shift for themselves for at least ten days before killing, for they are apt to range in the barn-yards and pick up filthy food, which

permeates all through the bird, its flesh frequently becoming so tainted, that it is unfit to be eaten.

The best method for steady and regular profit, or for domestic use, is to keep them constantly in high feed from the beginning, with plenty of clean, cool water; then they are always ready for the table, with but very little extra attention, their flesh will be juicier and richer in flavor than those fattened from a low and emaciated state, always commanding quick sale, at the highest price in the market, a healthful, nourishing and restorative food.

Some "cram" their poultry before killing, to make it appear heavy; this is a most injudicious plan, as it shows at a glance the dishonest intention of the shipper to benefit himself and swindle others, in his poor effort to obtain the price of poultry, for corn; the undigested food soon enters into fermentation, and putrefaction takes place, injuring their sale a great deal more than is gained in weight. Fowls should always be allowed to remain in their coops at least twenty-four hours previous to being killed, without food, then they will keep longer, and present a better appearance.

The best food for fattening fowls, old or young, is barley meal, or mixed with equal quantities of corn meal, cooked, and fed warm (a small quantity of brick dust in their drinking water is recommended), which will make flesh faster, and more solid, giving it a fine golden color after being dressed. Good food is positive economy.

The best mode for killing poultry, as it causes instant death without pain or disfigurement, is to suspend the birds by tying their legs firmly to a pole or heavy wire across the killing room, a convenient distance from the floor, and opening the fowl's beak,

and with a sharp-pointed and narrow-bladed knife, make an incision at the back of the roof, which will divide the vertebrae and cause immediate death.

Dry-pluck the feathers and pin-feathers all off neat and clean, while warm, without breaking the skin; then plunge it into a kettle of very hot water, holding it there only long enough for the bird to "plump," then hang it up—turkeys and chickens by the legs, and ducks and geese by the heads. Do not remove the entrails, heads or feet. This mode gives the poultry a nice buttery, golden color, that attracts the eye of the epicure.

Pack only when thoroughly dry and cold (not frozen) in medium sized, clean boxes or barrels, in thoroughly cleaned and dusted rye straw, and to be extra nice, wrap each bird in clean, white (not printed) paper, fold the head under its body, legs stretched out, lay in the left hand corner, with its head toward the end of the box, back up, fill the first row, then commence the second in the same way, only let the bird's head pass up between the rumps of the two adjoining ones; this makes it solid; the last row reverse the order, placing the head towards the end of the box, letting the feet pass under each other, should there be space between these rows wide enough to lay in a few side-wise, do so; if not, fill in tight with straw, so the poultry cannot move. This gives uniformity of appearance and a firmness that will prevent moving or chafing during transportation; over this layer place straw enough to prevent one layer from coming in contact with the other, and add other layers until the box is filled full. Great care must be taken in packing not to break the skin, for during transportation such places turn black and injure its sale.

DISEASES AND THEIR CURE

Usually, when fowls take cold, inflammation of the head and eyes is one of the first symptoms to attract attention. If allowed to suffer from neglect and continued exposure, the trouble speedily runs into what is termed roup, or swelled head, and is often accompanied with canker or ulcerated sore throat. In the last-mentioned condition rattling in the throat often occurs.

Fowls are, however, sometimes troubled with difficulty in breathing and a rattling in the throat, as the result of atmospheric changes, and in such cases the affection is similar to bronchitis. While not considered very dangerous, there seems as yet to be no certain cure for it, and since it is contagious, we seldom give it much attention. The rattling, or gaping or wheezing, which comes from cankered throat and mouth, is a very different thing, and should be looked after immediately.

A breeder whose fowls are evidently suffering from the results of colds, writes thus: "My chickens are afflicted with a blindness and inflammation of the eyes. The eyes close up and there is a rattling in the throat part of the time when they breathe. What is the disease, and what is the remedy?"

The blindness and inflammation of the eyes can generally be easily cured if attended to promptly. The "Fancier's Gazette" of England, recommends to bathe the head and eyes with a solution of sulphate of zinc, five grains to the ounce of water. Chlorinated

soda, which you can get at any good chemist's, is also suggested. Carbolic acid, one part acid to forty parts water, is another remedy often mentioned, and acetic acid is likewise highly spoken of.

A general observation and experience in the treatment of such cases is that diluted vinegar and common salt water combined make the best and most readily procured remedy we have met with. Chlorinated soda and acetic acid are only learned names for substances, the properties of which we have in as available a form in the simple and well-known articles of common salt and vinegar.

In a case of inflammation, as above mentioned, the head and eyes should be bathed several times each day with the solution of salt and vinegar. Open the mouth and you will most likely find a yellowish, cheesy substance in the slit in the roof of the mouth. This should be carefully removed with a quill or pointed stick. A flat piece of good hickory, four inches long and one-fourth of an inch wide, and as thick as a case knife, roundly pointed at one end, makes a good instrument for such work. If the cheesy matter has not yet formed in the head, you will at least find in the roof of the mouth a slimy discharge, similar to that which comes from the nostrils of the bird. This should be removed, as well as possible, with a sponge or soft rag. Then tie to the end of a small stick a piece of sponge saturated with the salt water and vinegar, and with this sponge out the mouth well, and force some of the wash through the slit in the roof of the mouth. It is convenient to have for this purpose a small syringe with a bent tube. The face and nostrils should also be well bathed with the salt and vinegar, and, no harm need be feared from getting

the wash into the eyes. This will be a benefit rather than an injury.

The diet of the fowl should be soft food. Soaked bread is good, seasoned with pepper. In the drinking water should be dissolved a little sulphate of iron. Stimulating foods and tonic drinks are of great benefit in such cases. If no more serious symptoms appear, your bird may be expected to recover in a short time.

Cankered throat may accompany a severe cold as well as roup in its worst stages. If on opening the mouth of a bird you find it badly coated or ulcerated, the tongue covered, and the ulcers extending down the throat, you had better give the case up as hopeless. If the ulcers appear only in small spots and streaks, and the tongue is clean, or nearly so, it is worth while to attempt a cure, provided the bird is worth the extra daily attention it will require. The course to be pursued is to take a stick, such as that above described, wet it well with the salt water and vinegar—the solution for this purpose may be as strong as it can be made—and then proceed to remove with the point all the ulcers from the roof and sides of the mouth and about the base of the tongue; in fact, all you find. Do not be uneasy about the bleeding, as no harm will come of it, but rather good. Wet the stick frequently with the salt water and vinegar, in order that as fast as the ulcers are removed the solution may immediately come to the exposed parts, thus causing them to heal and preventing the spread of the disease. Having carefully done all you can at one time in this way, give the inside of the mouth a good sponging with the wash, and if the fowl seems to require food, but is unable from the soreness of its

mouth to take it, some should be forced down its throat. The like course should be gone through with the next day, and the following, until the ulcers are entirely killed out and removed. In the meantime the fowl should be given easily-digested and stimulating food and tonic drink, as above recommended.

In some cases small postules appear on the sides of the head and the wattles and the ear lobes. The salt and vinegar will be found to be a good remedy for these also. Remove the scales and bathe the parts freely with the solution, repeating the operation once or twice each day. What is commonly termed swelled head is but an advanced stage of roup. The secretions seem to concentrate, settle and consolidate, as it were, at some one point, frequently on the face beneath the eye, yet seldom so deeply seated but that the accumulations may be reached and easily removed with the knife. Sometimes a mass of yellow, cheesy matter, as large as a thimble, will have formed at one place. It should be taken out, and the wound bathed with salt and vinegar. Nature will soon heal over the frightful looking cut if the work of cleansing has been well done.

About thirty per cent of hens are lost annually by diseases of every kind, so that I think a few simple remedies for some of the most common will be appreciated by my readers, and I therefore give them without further explanation, under their most common names, as quoted by fancy breeders. These receipts have been taken from the most trustworthy books and journals, and are known to the breeders as reliable.

ABORTION

Generally produced by fright. The remedy is to confine the bird in a rather dark pen, with a nest in

one corner. Soft food only should be used, given sparingly. The drinking water should be impregnated with a small amount of carbonate of soda. This disease must not be confounded with the ordinary laying of soft eggs.

APOPLEXY OR PARALYSIS

More probably arising from high feeding than any other cause. An unsteady walk, with drooping wings, as if the bird were giddy, is a warning symptom. Fasting and a dose of fifteen grains of jalap and one grain of calomel will be found very useful, with continued low diet for two or three days. In cases of sudden attacks, with loss of power and consciousness, it will be necessary to lance immediately the large vein under the wing, and to bleed freely until the bird recovers. Stop the flow of blood by means of burnt alum or other styptic, and take care that the fowl is not allowed to peck open the wound and cause death from hemorrhage. Cold water applied to the head is often of beneficial effect. Fortunately these diseases are both of infrequent occurrence.

BLACK ROT

Also rarely to be met with, and only to be cured in the earlier stages. Symptoms—blackening of the comb, and swelling of the legs and feet, accompanied with gradual emaciation. Treatment is a dose of calomel or castor oil, with warm and nourishing diet, together with the use of "Parrish's Chemical Food," or Tonic No. 4.

BRONCHITIS

Known by the frequent coughing, unaccompanied by discharge, as in the case of cold in the head. A small quantity of nitric and sulphuric acids in the

drinking water, with sugar enough to make the whole slightly sweet and acid to the taste, is all that is required. The food may be seasoned with a little cayenne or ginger, and the fowl should be kept in a dry place, moderately warm. Sometimes the disease is accompanied by a peculiar rattling in the throat. The homœopathic cure is two pellets of aconite in the morning before feeding, and the same in the evening, for two or three days. This is said to be a specific.

BUMBLE FOOT

A corn or abscess at the bottom of the foot, most frequently found in the larger breeds, and is supposed to be caused by descent from the perches to a hard board floor. Daily applications of lunar caustic, or pigment of iodine, painted over the spot with a brush, will often effect a cure. The tumor should afterwards be cut and the matter pressed out, the part thoroughly cleansed with warm water, and in day or two the caustic applied as before. One ounce of muriate of ammonia, dissolved in a pint of vinegar, is very useful in reducing the swelling. The bird should be compelled to sleep on straw during treatment. Another remedy is to wash the foot with tepid water and soap, afterwards cutting open the swollen foot and removing the putrid and diseased surface flesh, and applying sulphate of copper (blue vitriol), and then tying up the foot so as to retain the medicine as applied. In severe cases two or three applications may be necessary.

CANKER OR ULCERATION

This disease bears a striking analogy to the roup, but is distinguishable from the latter by a lack of discharge from the nostril. It frequently extends to the throat, covering the back of the tongue with ulcerous

formation. In such cases remove the ulcers with a sharp, flat stick of hard wood, and apply with a camel's-hair brush a wash of tincture of myrrh, borax and chlorate of potash, dissolved in water. Use powdered borax afterwards upon the sore. Give soft food, and occasionally bread soaked in ale. When the disease affects the eye, use McDougall's Fluid Extract for a wash, in the proportion of one teaspoonful to eight of water. As in the case of roup, the diseased fowl should be removed to warm, dry quarters, and the feathers on the neck and head kept clean by washing in warm water. Another remedy is to dissolve some alum in water and wash out the mouth, throat and eyes with it, after which sprinkle burnt alum on the sores; to be repeated daily until cured.

CANCER

The first symptoms are loss of the use of the legs, the bird squatting about on its hocks, and using its wings to assist locomotion. There is no apparent loss of appetite or energy, but absolute loss of power over the legs. The disease is incurable, as removal of the cancer by a surgical operation only results fatally in a week or so thereafter. When it is apparent that the disease has become seated, the most humane treatment for the breeder is to kill it.

CHOLERA

If there is a disease among fowl resulting more particularly from carelessness or ignorance than any other, it is the fatal disease known as the cholera. All writers on the subject agree that it arises from exposure to the sun, without sufficient shade, warm and stale drinking water, foul and offensive grass runs

occasioned by the droppings, and, most important of all, the absence of a regular supply of fresh green food, which is the great preventive of diarrhoea in fowls. This disease is rarely if ever known where a cool shade, clean runs, fresh cool water and green food are provided daily.

Symptoms—Sudden and violent thirst, diarrhoea, greenish droppings, afterwards thin and whitish, with extreme weakness and staggering or “falling about,” sometimes accompanied with cramps, and often with an “anxious” look about the face. Death results in from twelve to thirty-six hours.

Treatment—Administer every three hours the following: Rhubarb, 5 grains; cayenne pepper, 2 grains; laudanum, 10 drops. Give midway between each dose a teaspoonful of brandy, diluted with water containing 5 drops of McDougall's Fluid Extract, or either of the following:

No. 1—Equal parts of the tincture of opium, red pepper, rhubarb, peppermint and camphor, well shaken, with doses increased from ten to twenty drops several times a day when not immediately relieved.

No. 2—Two oz. each of alum, resin, copperas, lac sulphur and cayenne pepper, pulverize, then mix three tablespoonfuls of the powder with one quart of corn meal, and dampen for use. This is sufficient for twelve fowls, and may be used either as a preventive or cure. For the former, once or twice a week is sufficient. Rye or wheat, soaked well in high wines or strong whisky, fed occasionally, is also said to be a good preventive.

No. 3—Blue mass and cayenne pepper, each 1 oz.; camphor gum $\frac{1}{2}$ oz., and a teaspoonful of laudanum, well mixed and made into pills of ordinary size. Give

one pill every hour until the purging ceases. Also a teaspoonful of brandy morning and evening.

No. 4—Cayenne pepper and prepared chalk, each 2 parts; pulverized gentian and pulverized charcoal each 1 part (measurement, not weight); mix well together and form a paste, with either lard or sheep's suet. Give a pill the size of a common marble once a day, and keep in a warm and dry place forty-eight hours.

No. 5—Carbolic acid, 1 drachm; glycerine, 1 oz.; mix thoroughly, adding one quart of water. Of this solution use two tablespoonfuls to a gallon of water, allowing the fowl access to no other water. The fountains and feed boxes should be disinfected with carbolate of lime or carbolic acid. The water must be kept cool, plenty of shade provided, and the free use of green food indulged in, for those not attacked. No food or water with the exception of soft or moistened wheat bread in warm milk is needed for the diseased birds.

The use of kerosene in this disease has lately attracted some attention, and elsewhere we present a newspaper article on the curative qualities of this oil. It is said to be very efficacious.

CATARRH

A common cold, if neglected, is likely to terminate in roup. The bird should be immediately removed to a warm place. Three drops of mother tincture of aconite added to half a pint of the drinking water will be found beneficial. The food should be soft, mixed warm, and seasoned with Tonic No. 1.

One pill of the following, given night and morning, is highly recommended: $\frac{1}{4}$ oz, each of camphor,

valerian, cayenne pepper, lobelia, seed powder, and gum myrrh, made into forty-eight pills. If not better in a few days roup may be suspected, and the treatment should be the same as for that disease.

CONSUMPTION

Caused by cold or dampness, want of light and constitutional debility. Most frequently observed in birds related. The symptoms are chronic cough, with wasting away and loss of strength. Incurable when once fairly seated. Where its presence is suspected, cod liver oil added to the meal food is a corrective, together with "Parrish's Chemical Food," half a teaspoonful twice a day

CRAMP

Early chickens are most subject to this disease caused by exposure to damp during cold weather. It may be known by a tendency to walk on the toes, and afterwards to walk on the knuckles or outside of the foot. Also by squatting on the hock. Removal to a place provided with a dry boarded floor, well sanded, and kept clean, is usually sufficient. In several cases, where the toes are much contracted, the legs and feet should be bathed in warm water several times daily, opening and extending the toes, and afterwards drying them with a cloth. A little tonic should be added to food. Opium in quarter grain doses two or three times daily will prove beneficial in the treatment of this disease.

CROP BOUND

Occasioned by careless feeding with hard grain or pieces of tough meat, bone, or other substance too large for the bird to swallow, causing the crop to be so distended and swelled as to close the outlet to the

stomach. Warm water should be poured down the throat, and the crop gently kneaded or worked for an hour, if necessary, until it becomes soft, holding the bill open and the head down. Then give a tablespoonful of castor oil and feed sparingly for several days to prevent a permanent distention. If this is not effective an incision about an inch long should be made at the top of the crop, first removing some of the feathers, and care being taken not to open any of the large blood vessels. The contents of the crop should then be removed and the outlet examined to see that it is not stopped up. The incision may be closed by making three or four stitches with silk or horse-hair in the inner skin, and the same in the outer. Be careful not to sew the two skins together, as it is almost certainly fatal. Feed on soft or sopped bread, and allow no water for twenty-four hours after the operation.

SOFT CROP OR SWELLED

Usually caused by excessive drinking, and the contents of the crop are of a soft, fluid character. Confine the bird separately, and feed sparingly with soft food, thoroughly cooked. The water should be slightly acidulated with nitric acid, of which the bird should be allowed to drink very moderately after each meal only. The food should be seasoned with Tonic No. 4, and half a teaspoonful of sal volatile given every morning, in double the quantity of water. Chopped onions or garlic is the best green food during treatment, having themselves a strong remedial effect. It is to be very much doubted whether the distended crop resulting from negligence in feeding after treatment for "crop bound" can ever be successfully removed. The two disfigurements being similar in

appearance, are apt to be confounded. The one resulting from excessive drinking is properly a disease not so fatal as the hard crop, but nevertheless sufficiently dangerous to excite apprehension, while the other, beyond being unsightly, causes little injury to the bird.

DYSENTERY

This disease is really chronic diarrhoea, the droppings being mingled with blood. Rarely cured, and evidently contagious. The diseased birds should be removed to a cool place and the cholera remedy applied. Five drops of laudanum and five drops of "McDougall's Fluid Extract," every three hours, has also proved to be efficacious. A teaspoonful of strong cinnamon tea every hour should be given instead of water. The carcass, in case of death, should be buried deeply, away from the yards, and the latter should be thoroughly disinfected.

DEBILITY

Sudden terror or prostration from a long journey and excitement attendant on exhibition, often occasions fowls to droop without any apparent positive disease. In such cases nothing is better for restoring strength than a raw fresh laid egg daily. Strong tonics are not advisable, but the usual modicum of the "Douglas Mixture" given every third day in the drink will prove an invaluable aid.

DIARRHOEA

Is usually caused by too sudden changes of food, and sometimes the weather. In its earliest stages it may easily be checked by feeding soft food cooked with milk and mixed with chalk or seasoned with pulverized cinnamon, or by giving camphorated spirits, or water, every four to six hours, in doses of 10 to 20

drops according to severity, and feed nothing green except it be fresh grass, in limited quantities. Tegetmeier's recipe, given years ago, has had some favor, viz.: 5 grains chalk, 5 grains rhubarb, and 3 grains of cayenne pepper made into pills. But if the case is one of severity one teaspoonful of laudanum every six hours should be given until relieved. With proper and judicious feeding, plenty of fresh water, cleanliness and a plentiful supply of lime, oyster shells, or broken or ground bones, and a free use of the "Douglas Mixture," there need be but little fear of any serious results.

EGG BOUND

Inability to lay on account of unusual size of egg, may be known by the hen coming off the nest and moping round in evident distress, with wings on the ground; sometimes she remains on the nest. A large dose of castor oil will generally give relief in a few hours. Failing in this a free injection of olive oil into the oviduct may be used, care being taken not to break the egg. If no syringe is at hand the oil may be passed up with a feather, having first bathed the vent with warm water. The food should be soft and not of a stimulating nature. In case the egg passage should protrude or become ruptured, egg production should be totally arrested by giving the following: One grain calomel, one-twelfth grain of tartar emetic and one-fourth grain of opium, made into a pill, and administered every four hours. In the first pill the quantity of calomel and opium may be doubled.

ELEPHANTIASIS OR SCALY LEGS

A rough scurf on the legs and toes of a horny substance resembling scales. Not dangerous but very un-

sightly, and some strains are more predisposed to this disease than others. It is considered by some to be also slightly contagious. Different opinions exist as to its origin, but the treatment is simple and effective. The diseased fowl should be provided with a dry and moderately warm shelter, and a vigorous scrubbing with soap and warm water, with a hard brush, will remove a great deal of the scuff. Then anoint the affected parts with sulphur and lard, and give half a teaspoonful of powdered sulphur internally. The washing and anointing must be continued daily until a cure is effected. Three or four applications daily of kerosene oil is also recommended as a wash, and the slacked scales removed with a blunt knife, after which anoint as above. A weak solution of the sugar of lead is also an excellent wash to be used in the morning, followed in the evening by an application of lard, mixed with ointment of creosote. It is desirable that the yards should be clean and free from mud, and the fowl kept from exposure to wet or damp of any kind.

ERUPTIONS

A whitish scurf or efflorescence causing the loss of feathers, as far as it extends, generally results from lack of green food. This must be supplied and cleanliness attended to. The diseased parts should be dressed with tar and sulphur ointment, or a compound of cocoanut oil, one ounce, and powdered tumeric quarter of an ounce. A dose of castor oil followed by a teaspoonful of powdered sulphur daily in the food for ten days, should also be given. If the sulphur should tend to make the fowl scratch or irritate the head before a cure is effected, the parts should be dressed for a few days with McDougall's Fluid

Extract, diluted with three parts of water. As this affection is contagious, it is necessary to isolate the affected fowl.

FEATHER EATING

This unnatural appetite, generally observed in the hen, is a source of great annoyance. It is probably the result of thirst, and also a want of exercise consequent upon close confinement. There seems to be no specific for this disgusting practice, as remedies which have cured in one instance have utterly failed in another. Indeed, it may be a question whether the cures which have supposed to result from the giving of remedies, have not rather been a natural withdrawing of the disease itself than otherwise. External application would seem to be necessary in order to nauseate the unnatural appetite of the birds. The stumps of feathers should be extracted, and all the parts attached anointed with a stiff lather of carbolic soap. To give the birds occupation it is advisable to bury corn in the ground, or hang up a cabbage or lettuce by a string just within reach of the birds. A bran and linseed mash twice a week has been known to produce good effects. One-fourth of a grain of acotate of morphia daily, with a grain of calomel twice a week in addition is a good sedative. The drinking water should contain enough carbonate of potash to give it a decided alkaline taste. Raw bones crushed small have been known to effect a cure, and a sheaf of corn fodder thrown in the yards is said to be beneficial. It would be advisable to seclude a fowl which manifests a wicked desire for this habit until the appetite becomes more natural from forgetfulness.

The Poultry Bulletin says: From close observation, we very much doubt if it is the soft, bloody end of the

feather that is craved for, but the light, webby portion. In all cases we find the crop filled with this portion of the feather, and we have a number of times checked the trouble by giving the fowls a supply of finely cut rowen grass or hay. Where fowls have a run on grass, winter and summer, they do not indulge in this troublesome habit, even if they have no animal food at all; but confine them to a yard or house, no matter how large, if there be no grass or hay within reach, the trouble soon commences.

Another writer gives a rather novel method by which an incorrigible Patridge Cochin Cockerel was inadvertently cured. After giving him up as incurable, he put him in a run with twenty or more cockerels weeded out for killing. Instead of submitting to his cannibal tastes, however, these strangers made it rather uncomfortable for him, and to use an expressive Westernism, caused him to "gyrate round the yard like a Chinese joss with the jim-jams," uttering doleful cries. He was completely cured, and never afterwards offered the first indignity to his hens. Perhaps, after all, a good thrashing like the above might prove a sovereign specific for this offensive habit.

FROST BITES

Large combed breeds especially suffer from having combs and wattles affected by frost. By oiling them with a sponge every morning, this may be prevented. The best treatment of frost bite is a vigorous application of snow or very cold water, afterwards applying glycerine. Painting the frozen part with compound tincture of myrrh three times a day is said to be beneficial. Turpentine is also recommended.

FLEDGING

When the weather is bad and the chicks appear to be suffering much, the food may be seasoned with No. 3 tonic, and the addition of tincture of iron to the water. Warm milk should also be given to drink.

FRACTURES

A broken shank may be "set" without difficulty, and secured with a splint of porous brown paper, saturated with white of eggs, which hardens as it dries. A broken wing is best cared for by putting the feathers in position and binding tightly together about an inch from the end. But unless the accident happened to a very valuable fowl, useful to breed from, the time and care necessary to successfully treat fractures are generally unprofitably wasted.

GAPES

This disease is caused by the windpipe of chickens or young fowls being infested with worms, eventually causing suffocation. How the disease is propagated is a debatable question. The worm is usually found doubled, of a pale reddish color, and rather less than three-quarters of an inch long. The number in one chicken usually varies from two to a dozen. Dirt and damp have undoubtedly a predisposing effect, as it is well known that gapes rarely ever trouble a clean and dry yard.

By many it is supposed that the worm is generated in some manner by lice or a similar parasite which infests the head of young chicks, and as a preventive the following ointment, applied very lightly on the back of the head, on the throat, and under the wings, in a melted or fluid state, at the time of taking chick-

ens from the nest, is said to remedy the evil: Mercurial ointment, 1 oz., pure lard, 1 oz.; flour of sulphur, $\frac{1}{2}$ oz.; crude petroleum, 1 oz. It is stated on good authority that chicks anointed in this manner have never had the gapes, while others of the same broods not anointed, have been affected. Another method of keeping the chicks free from the parasites that are supposed to produce gapes is to apply once a week, under the wings and on the breast of the hen, a small quantity of carbolic soap in solution. The effect of the ointment beginning to destroy the parasites, would seem to give color to the theory that gapes are the result of the presence of lice or similar vermin, and would also tally very well with the fact that the disease is comparatively unknown in clean and comfortable quarters. A free use of carbolic disinfecting powder is an excellent preventive. The disease may be checked after it has entered the yard, by using fluid carbonate, camphor, or lime in the drinking water, and the affected bird made to inhale the vapor of carbolic acid by placing a few drops on a red hot shovel, and holding the bird in the fumes until it is nearly suffocated. This kills the worms, and is an effectual cure. The worms may be taken from the throat, also, in the following manner: Take a medium soft quill feather, pluck the web from both sides to within a short distance of the tip, and wet with a solution of 20 grains carbolic acid and one ounce of glycerine. Run the feather down the windpipe, give it three or four turns and quickly withdraw. Repeat two or three times with a new feather each time. The acid paralyzes the worms, and the glycerine sticks them to the feather, and they are thereby drawn out of the trachea. The feathers and all matter drawn

from the throat of the fowl should be burnt, in order to prevent the exposure of the rest of the flock to contagion.

Another remedy is to administer a kernel of black pepper to the chick affected, which is said to destroy the worm.

LEG WEAKNESS

Young fowls of the larger breeds frequently outgrow their strength from a lack of bony matter, shown by constant squatting about instead of walking or standing. To prevent the occurrence of this affection, give all young fowls plenty of bone dust or broken bones and oyster shells. When first discovered it may be checked and strength restored by giving "Parrish's Chemical Food," a tablespoonful to a pint of water. A little tincture of muriate of iron in the drinking water is also beneficial.

GOUT

This is a disease of the legs which can be distinguished from leg weakness by the feverish condition of the legs. Remove the bird to a warm dry place, give a dose of jalap or calomel to open the bowels, after which a half-grain pill of extract of colchicum should be administered twice a day. The legs and joints may be well rubbed with sweet oil daily with benefit.

GIDDINESS

Usually resulting from too high feeding, and likely to develop in apoplexy. Hold the head under a stream of water, and reduce the system by a dose of castor oil, and feed on sparer diet.

LICE

To guard against the encroachment of lice and other like vermin, the walls of the sheds should be

regularly washed every year with strong lime-wash, containing a pound of sulphate of iron to every three gallons, applied hot from the slaking. A thorough syringing either with paraffine or a solution of carbolic acid will also be efficacious in getting rid of the annoyance. Carbolic acid is certain death to all insects, and is an invaluable aid to the resources of the poultry keeper.

Experience proves that the free use of dry, sifted coal ashes is an excellent exterminator of these pests. The ashes may be sprinkled over the roosts, and a commodious box filled with this material should be provided for the fowls to dust in—a provision of which they seem to take pleasure in availing themselves. In making up nests for hatching, it is advisable to put ashes in the bottom and cover with clean straw. After the chicks make their appearance, the nests should be thoroughly cleansed and the straw and litter destroyed. In localities where coal ashes cannot be easily procured, good dry sand may be substituted, in which carbolic powder, or sulphur, or both has been sprinkled.

It sometimes occurs that, in spite of all precautions, the vermin accumulate to such an extent that the house becomes literally alive with them. In such cases a thorough cleansing is necessary. All the hay and straw in the nests should be burnt, the hens driven out and the house closed tightly and fumigated with sulphur. This may be done by putting a pound or so of brimstone in an iron pot and dropping on it a piece of red-hot iron. Keep the house closed two or three hours, after which it should be well ventilated and swept out thoroughly. The walls, inside and out—in fact every place that can be reached—should be

washed with hot water, in which has been dissolved potash, one pound to every quart of water. Then follow with kerosene oil. Fresh hay is needed for the nests, and assurance is made doubly sure by white-washing. This radical treatment is not accomplished without some trouble, but the result amply repays the labor.

TO KEEP LICE OUT OF THE HEN-HOUSE

These pests are about the worst the poultry keeper has to contend with, and I therefore give a simple cure if not an entire preventive.

Take a hot pan or iron pot, place it in the hen-house and pour into it at least one pound of sulphur. Be careful not to inhale the fumes. Close all windows and doors and let the lice enjoy the atmosphere for about two hours. Then air the house and give it a good coat of whitewash, not forgetting the roosts. Change the nests and you will find yourself free from these pests.

INDIGESTION

Loss of appetite, caused by feeding too highly seasoned food. The diet should be restricted to soft, well cooked food, twice a day, with fresh water in moderate quantities, containing the "Douglas Mixture." Where a run cannot be had, a little fresh grass cut fine is beneficial. If the disease does not yield to this treatment, give daily five grains of rhubarb, changed every fourth day for one of calomel.

LIVER DISEASE

Most generally observed in cold and damp localities. Indigestion is frequently the forerunner of this disease, and the remedies recommended in such cases should be applied. If, however, the bird should take on a

sickly, yellowish look about the head and comb, there is no doubt about serious enlargement of the liver. Alternative doses of mercury, followed by cod liver oil and Parrish's Food, may effect cures where not deep seated, but success cannot be expected where the morbid structures are of any considerable size. Poultry keepers should never breed from fowl affected in this way.

MOULTING

Moulting is the discarding of the summer coat of feathers and putting one on suitable for cold weather. Perhaps many poultry keepers have never considered the great drain upon the system of the fowl during this change of covering. Not only do the regular flesh-forming, life-giving processes of nature have to be fulfilled, but an entire new coat of feathers has also to be manufactured. These feathers consist not of flesh and blood alone, but of component parts of mineral and animal substances. These substances are assimilated from the food, and unless birds can obtain such food as contains the necessary qualities, the work drags, is prolonged, and the poor fowl droops and grows thinner in the vain endeavor to fulfill nature's requirements without the proper means to work with. The moulting season is the most critical period of the year for old fowls; and yet, in ninety-nine cases out of a hundred, there is less care taken then than in the Spring, when everything is in their favor. Not only is an abundance of warming, nutritious food needed, but a tonic of some kind should also be given. Stale bread, sopped in old ale, given two or three times a week, is always beneficial; but perhaps one of the best things is to use the "Douglas Mixture," in the propor-

tion of a teaspoonful to a pint of water, in the drinking fountain, and keep it by them during the whole time of moulting. A little hemp seed given every day is also beneficial, and with these aids, and a little pepper on their food, with perhaps a little extra meat, or even a little ale during the few weeks the process lasts, there will rarely be any loss. With hardy kinds and good shelter such precautions are hardly necessary but they cost little and have their effect also on the early recommencement of laying. A tonic that is also recommended is gin and molasses, in proportion to three parts gin to one of molasses. A tablespoonful is a dose for an adult fowl, giving it before feeding in the morning; where the fowls do not appear to have an unusually hard time, twice or three times a week is sufficient. But where the fowls are in close confinement, they must have iron in some shape. A little treatment of this kind not only benefits the health of the fowl, but shortens the period of moulting fully one-third. In addition to that, the growth of feathers is stronger and heavier, and the fowls are thus better able to stand the cold of winter. The appearance of the fowl is also vastly better, the feathers are lustrous, and appear as if oiled; the bird takes on fat at once, and meets the cold weather with a vigorous health and strength which otherwise he might not have.

PIP

The symptoms are a short, quick, spasmodic chirrup, repeated at short intervals. On examination a dark colored, dry, horny scale will be found on the end of the tongue. This is not the disease, as many suppose, but the results of the disease. In some cases, if

not checked, the beak will turn yellow at the base, and the plumage become ruffled; appetite fails, and the bird mopes around and finally dies. A little cayenne or black pepper mixed with meal and administered three times a day will generally effect a cure. Another remedy is to apply chlorinated soda to the horny scale on the tongue. This will soften the crust, which will come off without difficulty. Feed soft food and give a dose of castor oil or other aperient.

RHEUMATISM

Weakness of the legs, stiffness of the joints, contraction of the toes, are symptoms of this disease, which may be mistaken for cramps. The treatment is similar. The bird must be put in a warm and dry place, and fed with warm and rather stimulating food. The legs should be bathed in rather hot water containing some mustard, and afterwards dried. Half a grain of opium twice a day should be given internally. A little cooked meal every day is beneficial, and minute doses of oil of mustard have been of marked efficacy in some cases.

Roup

Probably the amateur, and sometimes even the experienced breeder, turns more anxiously to the treatises on this disease than to any other, for the reason that it is at once the most annoying and destructive of the whole catalogue, though less to be dreaded now than formerly. Nearly all writers agree that roup results from exposure to damp, draughts and confinement in tainted coops. It is highly contagious, the germs of the disease being communicated by drinking or other contact. The symptoms of roup are at first identical with those of a severe cold; the discharge from the nostril however, soon loses its transparent character,

becoming more or less opaque, with a peculiar and offensive odor; froth appears in the inner corner of the eye; the lids swell, and sometimes the eye-ball is entirely concealed. In very severe cases the cavity of the nose becomes filled with the diseased secretion, which cannot escape, owing to the small size and closure of the nostril and then the face swells considerably.

Treatment—In this disease, nearly equal numbers recover, under various modes of treatment, so far as relates to internal remedies. But in all cases the bird is at once to be isolated, and the water vessels immediately disinfected. McDougall's Fluid Extract is excellent for this purpose. Warm, dry lodging and stimulating nutritious food are the first essentials to recovery. The eyes and head should be frequently bathed with warm water and remedial agents of some kind applied to the diseased membrane. This is somewhat difficult, on account of the nostrils being closed up, but may be overcome by inserting the point of a small syringe into the slit in the roof of the mouth and turning it rather to the outside for each nostril. Labarraque's solution of Chlorinated Soda is the injection most in use by a number of the best fanciers. Tegetmeier says he has used a few drops of a dilute solution (10 grains to the ounce of water) of sulphate of copper, with very favorable results. The internal treatment is a dose of castor oil, to be followed every morning and evening by a pill of balsam copaiba, 1 oz. liquorice, in powder, $\frac{1}{2}$ oz.; piperine, 1 drachm, with enough magnesia added to make the mass into sixty doses or pills. A few drops of tincture of iron or McDougall's Fluid Extract should be added to the drinking water.

We also present the following remedies, all of which are said to have effected cures in particular instances. Perhaps it would be well, in case a number of fowl are simultaneously attacked, to try them separately on different birds. That which acted most promptly might then be applied to all.

No. 1. Powdered sulphate of iron, $\frac{1}{2}$ drachm; capsicum powder, 1 drachm; extract of liquorice, $\frac{1}{2}$ oz.; make into 30 pills. Give one at a time three times a day for three days; then take $\frac{1}{2}$ oz. sulphate of iron and 1 oz. cayenne pepper in fine powder. Mix carefully a teaspoonful of these powders with butter, and divide into ten parts. Give one part twice a day. Wash the head, eyes and inside of the mouth and nostrils with vinegar; it is very cleansing and beneficial.

No. 2. As soon as the bird shows the usual symptoms, take it to a small room or outhouse, close the door and windows, take a shovelful of red-hot coals from the stove and on them sprinkle flour of sulphur (pounded brimstone). Let the bird inhale this gas for about ten minutes—it will cause it to sneeze, and the congealed matter will be blown or thrown up through the nostrils and so relieve the poor bird and its symptoms.

No. 3. Bathe the head and throat in warm salted water, after which, with the thumb and finger open the eyes and wash them well with a rag saturated with salted warm water and then give a pill made of equal parts of cayenne pepper and prepared chalk. Follow this treatment every morning, and, if there be any rattling in the throat, give a teaspoonful of cod-liver oil every night.

No. 4. In the first stages of the disease give a dose of castor oil, which will generally effect a cure; but if

the mouth and tonsils have become ulcerated, several doses may be necessary, given twelve hours apart. Use a small mop, dipped in vinegar, to cleanse the mouth, head, throat, and nostrils, after which dip a feather or mop in soft soap and touch every ulcer.

No. 5. Sugar of lead and pulverized opium, 20 grains each; mix with one pint of soft water. With a small syringe inject warm water into the nostril of the sick bird and then inject the lotion. By using a small bent tube on the syringe an injection can be forced into the nostril through the upper part of the mouth. Feed with soft food only, giving plenty of chopped vegetables, and mix ale with the food.

No. 6. Bathe the head with tepid water and castile soap, removing all unhealthy secretions about the eyes, head or throat, and if there be any visible ulceration wash well with a strong solution of alum water, and give a bolus of lard and sulphur mixed as large as an English walnut, at the same time anointing the head well with the mixture of lard and sulphur.

No. 7. Wash the head with cresylic soap suds until the nostrils are opened and the eyes relieved. Then strip a feather to within half an inch of the end, and dipping it into diluted nitric acid, insert it into the nostril of the fowl. Two or three applications will generally be sufficient.

No. 8 Five Drops tincture of iron in a teaspoonful of water thrice a day. Feed the fowl with scalded food well seasoned with cayenne pepper.

Undoubtedly the seeds of this disease are laid in the sudden changes from warm to cold nights, when the summer changes to fall, and the chickens are allowed to occupy their unprotected coops and wander about hungry and cold in the raw, early morning.

This would especially tend to the development of roup if there should be a continued spell of damp weather, for roup, after all, is simply a chronic catarrh or cold. Upon the first indication of a change of weather in the fall, the young chicks should be provided with warm, dry quarters, and not allowed their liberty in the morning until fed. A plentiful supply of good, nutritious food and tincture of iron added to their water, with a little sulphur in their soft food, will be found of great benefit. Prompt attention to these matters will eventually result in preventing the appearance of the roup—the dreaded scourge of the poultry yard.

RUMP-AIL

This difficulty, occasioned by the badness and infection of the hen house, has for symptoms, constipation, slowness in walk, troubled sleep, sad way, low head, drooping tail and bristling feathers. The chicken does not scratch, and finally a tumor forms around the rump. It is necessary to cut this tumor with a sharp instrument, and press it with the fingers to expel the pus, then wash the wound with vinegar or stale wine, and feed with agreeable diet, like barley, bran, or broiled rye or lettuce. One of the first precautions to take is to purify the hen house.

SCALY LEGS

Under the head of Elephantiasis will be found some remedies for this disease, but having come across the following, it was decided to insert them:

Dissolve a little carbonate of soda (sal soda) in water and rub the feet and legs every day with this solution until the scurf is removed. After this is done and the feet and legs become dry, anoint them well with lard

and sprinkle on some sulphur or red precipitate, or they may be made into an ointment before they are applied.

Another remedy is to use an application of cocoanut oil or tumeric—the proportions are about one-fourth of an ounce of tumeric powder to an ounce of the oil; this forms a yellow ointment. Apply it to the parts affected, and a few applications will be sufficient to effect a cure.

SOFT EGGS

If a frequent occurrence, a sign of over-feeding. Reduce the food and feed sparingly on mashed potatoes. In some cases, soft eggs occur from the entire absence of any material to form the shell. The fowl should be supplied with old mortar, burnt oyster shells pounded, or similar ingredients. Bricks are highly beneficial.

WRY TAIL

Carrying the tail to one side, strongly hereditary, and evidence of a weakly constitution. The surest way to cause its disappearance and prevent its recurrence is to get rid of the fowl altogether.

TURKEYS

The best preventive for sickness in these birds as well as to help them through the red is to mix finely cut onions or chives in their food, which ought to consist of Indian meal mixed with either milk or water, but small potatoes boiled and mashed with plenty of pepper may be used with raw onions chopped fine instead.

KEROSENE AS A CURATIVE

We have seen, recently, testimonials from so many quarters, as well South as North, as to the efficacy of

kerosene oil in chicken cholera, as to inspire a hope that an unfailing remedy has at last been found for this hitherto most desolating disease. A Woodville, Miss., correspondent of the New Orleans "Home Journal," says: "I tried all the remedies mentioned in your paper for cholera, but none seemed to do any permanent good until I tried coal (kerosene) oil; this has effectually arrested the disease, and I am satisfied is a good thing." In addition to this, the editor of the "Journal" says: "We had a pullet which was actually on its last legs, not being able or willing to feed any more. Our better half took some grits and mixed a sufficiency of kerosene with it to make into pills and crammed some of it down the throat of the fowl. The effect was almost instantaneous, as at the next feeding time it appeared with the other fowls and participated in the meal, and since then has been constantly improving. We now feed corn mixed in kerosene oil three times a week, and since adopting this mode have had no new case of cholera.

A correspondent writing to the "Country Gentleman" from Habersham County, Ga., says: "I have found kerosene oil a cure for chicken cholera. Last year I lost my entire flock. This year, by soaking my corn in kerosene, but one has died, although several have been sick.

A recent number of the "Southern Homestead" says that the curative power of kerosene has been as prompt in giving relief to an equine sufferer as to the pets of the poultry yard: "The peculiarly penetrating nature of kerosene makes it one of the best external applications for bruises, sore throat, diphtheria, etc. which can be employed.

CHLORATE OF POTASH

For internal administration to fowls for canker or roup, or for common colds or cough, chlorate of potash is said to be very beneficial and is at the same time a perfectly safe remedy to use. Water only dissolves a certain proportion and no more of the salt, and it should always be made as strong as it can be, which is making what is technically called a "saturated solution." For convenience it is better to keep it prepared ready for use, as follows: Put in a half pint bottle an ounce of chlorate of potash and an ounce of crushed sugar, then fill the bottle with water and shake occasionally until no more will dissolve. The sugar seems to serve the double purpose of loosening the phlegm in the throat of the fowl and to disguise the saline taste of the chlorate, making it more easy of administration. Chlorate of potash will not only remove canker and ulceration in the mouth and throat, but cools and allays fever and by its action in the stomach, destroys all traces of canker in the system of the fowl, thus rendering the cure a permanent one. After using off the water more may be added, as long as any of the chlorate remains, adding sugar each time, as the sugar, unlike the chlorate, all dissolves the first time. Give adult fowls a teaspoonful of the solution two or three times a day, in severe cases giving it oftener if required. An ounce of the solution in a pint of water is a good remedy for common colds and for young chicks, to be given in place of drinking water, continuing for several days, or until a cure is effected.

Charcoal—It is claimed that a free use of crushed charcoal will prevent the disease known as the enlarge-

ment of the liver. It keeps the organs in a healthy state; their fondness for it would indicate some benefit derived from its use, the same as in the case of gravel.

Corn or corn meal is the cheapest and best food for fattening fowls. Oat meal, bran, and middlings are the best for the young, growing stock.

Capsicum mixed with the food and assafoetida in the drinking water is recommended for cholera in fowls.

MONEY VERSUS HUMANITY

On page 60, I explained how the hen could be made to remain on the eggs only six days instead of twenty-one. This innovation in the way of hatching eggs, has naturally attracted the special attention of the editors of the principal agricultural newspapers, as well as the leading agricultural societies, and it has afforded me the pleasure of receiving from these distinguished parties, long and interesting letters confirming the fact that a great many breeders acknowledge that it is inhuman to compel the hen to remain twenty-one days on her eggs, and I hope that before long, all breeders will have abandoned this barbarous custom of a past age, and that they will recognize that not only will they be a real profit in their pockets, but by so doing, they will accomplish an act of humanity as well, in return for the good they derive from their hens; for the poultry yard in all farms is the one department that gives the less work and brings most benefit, for a few months after her birth the chick is sold with an immense profit. If the breeder keeps her in his stock she will yield him over 600 eggs in the space of four or five years, after which time he can sell her, still with a large profit. Among the numerous newspapers which advise and recommend the breeders to adopt this fin de siecle way of hatching eggs, I quote a few lines taken from a long article published in the "Chicago Tribune."

"Hatching eggs without the help of the hen is the easiest matter possible, and in no sense whatever con-

trary to nature. . . . Here is an important consideration to farmers: In the winter months, especially out west, little farm work can be done; but if our agricultural readers will only give their time to poultry-raising on the above system during that period, the cash-books will show unexpected results at the annual balancing. The system itself is so simple that children of six or seven years of age can carry it out as well as adults, perhaps better, for they are more gentle and cautious in their actions.

"Chickens hatched and raised by this process are as healthy and vigorous as any to be found; they are incomparably more numerous than those produced by what is ignorantly termed the 'natural' method. Some farmers, however, as well as many professional poultry breeders, possess such crowbar-like backbones that they cannot bend to any proposed improvement on the old style of doing things."—Chicago Tribune.

The numerous readers of this important paper must have found this article severe. I will add that it is very just, and hope that a great number of them will practice the good advice given them with such frankness and sincerity, and those who will persist in following an outrageous custom, will not only be guilty of neglecting their interests, but will also commit an act of cruelty to animals, which is punishable by the laws of man and condemned by our Great Master.

THE AUTHOR.

**Facts without believing are better than believing
without facts.**

In order to satisfy intelligent farmers and poultry breeders upon the merit of my invention, I leave them to read very carefully the list of awards and the high encomiums bestowed upon it by the leading press, of which a few quotations are printed in the following list.

INTERNATIONAL EXHIBITION

THE UNITED STATES CENTENNIAL COMMISSION

Has examined the Report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

REPORT ON AWARDS

INCUBATOR AND ARTIFICIAL MOTHER

PROF. ADOLPH CORBETT,

The undersigned, having examined the product herein described, respectfully recommends the same to the United States Centennial Commission, for award for the following reasons, viz:

The apparatus is simple, and, provided proper attention is paid to keeping up an even temperature, efficient. It comprises two distinct circular boxes, which are surrounded by fresh horse manure. The degree of heat can be regulated by a ventilator at the top. The second box, where the chickens are reared, contains a circular cap, the under side covered with long wool, adjusted by means of a vertical rod with a screw head, to which it is attached. There is nothing to get out of order.

JOHN COLEMAN

APPROVAL OF GROUP JUDGES

JAMES BRUCE

PEDRO PAES LEME

E. OLDENDORFF

IKEDO KENZO

JAS. S. GRINNELL

FRANCIS A. WALKER,

[A true copy of the Record.]

Chief of Bureau of Awards.

Given by authority of the U. S. Centennial Commission,

J. L. CAMPBELL,

A. T. GOSHORN,

Secretary.

Director-General.

J. R. HAWLEY,

President.

OFFICAL AWARDS

MEDAL AND DIPLOMA BY THE INTERNATIONAL EXHIBITION, PHILADELPHIA

MEDAL AND DIPLOMA BY THE AMERICAN INSTITUTE

GRAND MEDAL OF HONOR AT THE INTERNATIONAL EXHIBITION AT SANTIAGO, CHILI

GOLD MEDAL AND DIPLOMA BY THE QUEENS COUNTY AGRICULTURAL SOCIETY

GOLD MEDAL AND DIPLOMA BY THE FARMERS' AND MECHANICS' CLUB, HICKSVILLE, N. Y.

NEW YORK STATE FAIR, ROCHESTER

First Premium and Certificate of Merit

ALBANY, AGRICULTURAL AND ARTS ASSOCIATION

First Premium and Certificate of Merit for Incubator and Artificial Mother

SARATOGA COUNTY AGRICULTURAL
SOCIETY

First Premium and Diploma of Merit for Incubator
and Artificial Mother

SUFFOLK COUNTY AGRICULTURAL
SOCIETY

First Premium and Diploma of Merit for Incubator
and Artificial Mother

DIPLOMA OF CONTINUED EXCELLENCE BY
THE AMERICAN INSTITUTE

DIPLOMA BY THE NEW JERSEY STATE
AGRICULTURAL SOCIETY

DIPLOMA BY CAPITAL STATE FAIR ASSO-
CIATION, AUSTIN, TEXAS

DIPLOMA BY NORTHEASTERN AGRICUL-
TURAL SOCIETY OF INDIANA

DIPLOMA BY EGG HARBOR CITY AGRICUL-
TURAL SOCIETY, NEW JERSEY

DIPLOMA BY MUSCATINE, IOWA, AGRICUL-
TURAL SOCIETY

DIPLOMA BY FREEMONT, OHIO, AGRICUL-
TURAL SOCIETY

DIPLOMA BY CARROLLTON, OHIO, AGRI-
CULTURAL SOCIETY

DIPLOMA BY BROCTON, MASS., AGRICUL-
TURAL SOCIETY

DIPLOMA BY COLUMBIA COUNTY AGRICUL-
TURAL SOCIETY OF PENN'A

DIPLOMA BY DELAWARE COUNTY, OHIO,
AGRICULTURAL SOCIETY

DIPLOMA BY UNION FAIR ASSOCIATION, OF
CENTRALIA, ILL.

DIPLOMA BY JO-DAVIESS COUNTY AGRI-
CULTURAL SOCIETY OF GALENA, ILL.

DIPLOMA BY FRANKLIN COUNTY AGRI-
CULTURAL SOCIETY OF PENN'A

DIPLOMA BY COSHOCTON, OHIO, AGRICUL-
TURAL SOCIETY

DIPLOMA BY JEFFERSON COUNTY AGRI-
CULTURAL SOCIETY OF OHIO

DIPLOMA BY DENISON, IOWA, AGRICUL-
TURAL SOCIETY

DIPLOMA BY LUCAS COUNTY AGRICULTU-
RAL SOCIETY OF IOWA

DIPLOMA BY MACOMB COUNTY AGRICUL-
TURAL SOCIETY OF MICHIGAN

DIPLOMA BY FRANKLIN COUNTY AGRICUL-
TURAL SOCIETY OF FARMINGTON, MAINE

DIPLOMA BY BRADFORD COUNTY AGRI-
CULTURAL SOCIETY OF TOWANDA, PA.

DIPLOMA BY EATON COUNTY AGRICUL-
TURAL SOCIETY OF CHARLOTTE, MICH.

DIPLOMA BY STARK COUNTY AGRICUL-
TURAL SOCIETY OF CANTON, OHIO

DIPLOMA BY LEWANEE, MICH., AGRICUL-
TURAL SOCIETY

DIPLOMA BY LIVINGSTON COUNTY, N. Y.,
AGRICULTURAL SOCIETY

DIPLOMA BY THE VAN BUREN COUNTY
AGRICULTURAL SOCIETY, PAW PAW, MICH.

DIPLOMA BY THE LYON COUNTY, IOWA,
AGRICULTURAL SOCIETY

DIPLOMA BY THE HILLSDALE COUNTY,
MICH., AGRICULTURAL SOCIETY

FEW EXTRACTS OF THE PRESS OPINIONS
AND OF THE OFFICIAL REPORTS, RE-
FERRING TO THE INVENTION

New York State Fair, Annual Official Report

The point of great attraction in this building was the corner devoted to the exhibition of Corbett's apparatus for hatching and raising poultry. It was in full operation, with a yard in front swarming with little chicks. The apparatus invented by Prof. Corbett has the advantage of not being dangerous because of the use of fire. The decomposition of the manure furnishes the requisite heat.

*Queen's County Agricultural Society,
33d Annual Report*

"The Society awarded a special Premium of a Gold Medal to Prof. A. Corbett of Hicksville, for his Chicken Incubator and Artificial Mother; a very valuable invention, which has attracted much attention."

American Agriculturist, N. Y.

Of late years there have been many efforts made to perfect a method of artificial incubation, and to get rid of the hen, which unfortunately is too fussy and too slow for our advanced ideas. Now that poultry bears so high a price, and young chickens for broilers are worth more than full-grown fowls, it is very desirable to have some way of improving upon the slow and unsatisfactory methods provided by nature. The most promising of all the methods, old or new, with which we have become acquainted, is the one here illustrated and described. It is the invention of Prof. A. Corbett, in which the old-fashioned heating material, horse-dung, is used. The apparatus consists of a

rounded box (Fig. 1) made of laths, having a door in the front and a movable cover at the top, in which is a ventilating flue having a graduated opening closed by a slide. This is placed in the center of a pile of horse-

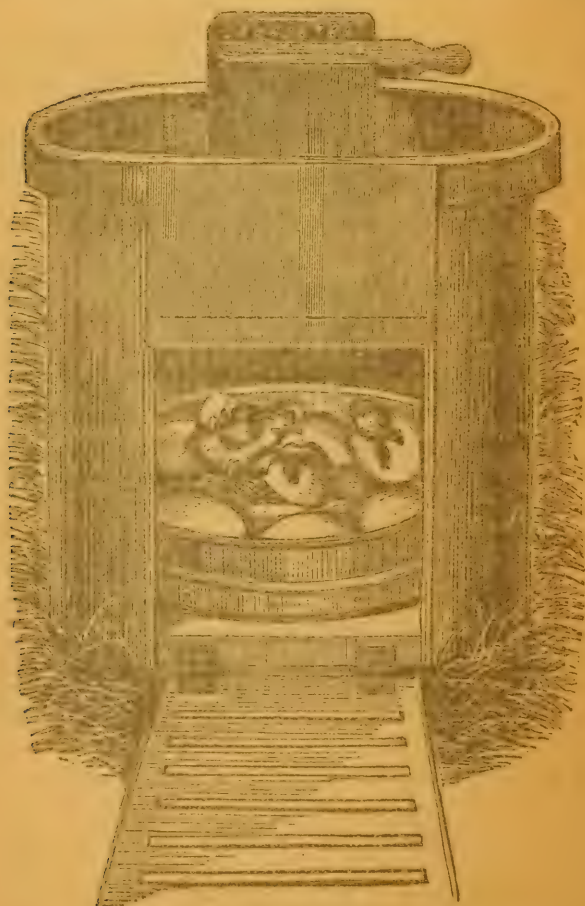


FIG. 1.—PROFESSOR CORBETT'S INCUBATOR

manure, which raises the necessary heat in a short time. When this has occurred, the eggs, arranged in wire sieves or frames, are placed in a box, and the cover is put on. The heat is carefully regulated by the ventilating slide, when shown to be necessary by

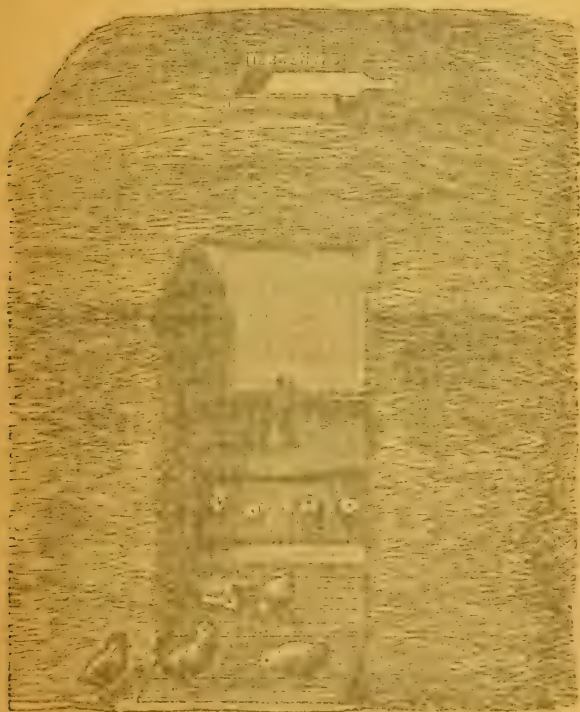


FIG 2 --PROFESSOR CORBETT'S ARTIFICIAL MOTHER
a thermometer laid upon the eggs. When the chickens appear the mother is made ready for them. This is a box exactly the same as the incubator, but provided with a horizontal disk, covered on the under side with a piece of sheep-skin from a long-wool sheep, and

arranged to be moved up and down by a screw. The manure is heaped partly around the box, to provide the needed warmth, the door is let down for a pathway in and out for the chicks (see Fig. 2), and in this they are placed as soon as ready to be removed from the incubator. After having been fed a few times the chicks will learn to come out from beneath the wool to feed, when the platform is tapped. Mr. Corbett has been very successful in using his apparatus, and when visiting his establishment, we saw proof of his success.

New York Herald

. . . The invention of Prof. Corbett, of Hicksville, N. Y., for which several medals were awarded him by all the great exhibitions, cannot fail to be of great service to farmers and breeders. Poultry, which is a source of great revenue in Europe generally, and in France particularly, has not received in America all the attention it deserves, and it is really surprising that a country of such vast resources and rich in products of all sorts as ours should be compelled to import eggs from Europe. 5,467,264 dozen eggs, valued at \$732,234, have been imported from Europe in the space of eleven months and thrown upon the markets, notwithstanding the fact that by the time they arrived here they were at least forty days old. We believe that Prof. Corbett's invention will be of great service to our business men and breeders as an improvement of the greatest importance, for the consumption of eggs in this country is calculated to be about \$60,000,000 annually.

New York Tribune

Poultry breeders are well aware that the use of the hen is entirely unnecessary so far as hatching is concerned, her value beyond egg-laying being confined to sheltering and warming the chickens after they burst their shells. A hen lays on an average some 100 eggs annually, but she only sits once, hatching seldom more than seven during her period of incubation. If she

could hatch the whole number she lays, or even four-fifths only, there would clearly be a greater chance of profit for the breeder; and many devices have in consequence been set on foot to substitute artificial means; for the motherly duties of the hen. Professor Corbett has accomplished this result by his discovery, and as he is carrying out his invention on an immense scale at Hicksville, the readers of "The Tribune" may learn something from a report of his operations. . . . All known descriptions of domestic poultry are hatched and raised on this estate by the above means (horse-manure). These descriptions include common barn-yard fowls, Dorkings, Game, White Leghorn, Black Spanish, Brahmas, Shanghais, and, as some amateurs choose to call them, Cochin-Chinas and Brahma-pootras. They are all amenable to the same system, as well as geese, turkeys, ducks, partridges, etc., and all of them are equally productive and remunerative. His process is alike valuable to the housewife of moderate means, passing her leisure moments in the poultry yard, as to the breeder on a large scale who seeks to supply great city markets with eggs and chickens.

Moore's Rural New Yorker

The poultry breeder experiences considerable difficulty and no small amount of loss from the fact that so few hens are good setters. It has long been a well ascertained truth that the females of certain breeds are all but valueless for this purpose. . . . There is no necessity, however, for the employment of hens in the hatching of eggs, and ancient Egyptians, three thousand years ago, having accomplished the required result by artificial means alone. Other nations in later years have produced similar effects by like methods, so that it is safe to say that, beyond the duty of laying eggs, hens are not needed in the poultry-yard. A visit to the Gallinoculture Institute of Professor Adolphe Corbett, at Hicksville, L. I., will satisfy the most skeptical on this point. Fowls of all breeds

and ages are there to be found in immense numbers; all of them in the best condition of health, and all hatched and raised artificially. The system employed is the invention of Mr. Corbett himself, the sole caloric agent being horse manure. . . . The poultry raised by this method are in all respects as healthy and vigorous as any to be seen elsewhere, while, at the same time, none of them are lamed, as too frequently is the case by natural mothers. . . . Mr. Corbett's establishment, in fact, proves that poultry of all kinds can be equally well hatched, and far better raised by his system than by what is known as the "natural" method. Being a breeder on a large scale, he has fair opportunities for judging the commercial value of his invention; and he asserts that the cost of production by his system saves from twenty to twenty-five per cent over the usual method. This is a practical exemplification of the old saying that, "the proof of the pudding is in the eating," and high authorities endorse Mr. Corbett's conclusions. The N. Y. State Agricultural Society, at its annual meeting last year, awarded him their Silver Medal for his invention; and the judges of the Queens County Agricultural Society likewise gave him their Gold Medal and Diploma.

American Artisan

American Institute Fair.—We have only room left to notice Professor A. Corbett's Apparatus for hatching and raising every kind of Poultry. . . . Each apparatus is combined for hatching and also for raising. The mother is of a size in proportion with that of the hatching apparatus. . . . Spring chickens by this process are ready for the market all the year round, every month in the year, every week in the month, and his process is alike valuable to the housewife of moderate means, passing her leisure moment in the poultry-yard, as to the breeder on a larger scale, who seeks to supply great city markets with eggs and chickens.

Philadelphia Weekly Press

It will be well for our readers to recognize the vastly superior advantages of artificial hatching over what is termed the natural. A hen will lay from 120 to 250 eggs annually, but she seldom sets more than once during that period, hatching on the average about seven. The great majority of her eggs are thus only useful for culinary purposes, but were these placed in Corbett's incubator, all of them would become chickens within three weeks, except those which turn out to be "clear," or unvitalized. Three months later, at a cost in these parts not exceeding twenty-five cents per head, the little ones will have grown into "spring chickens," selling in this city and neighborhood at from seventy-five cents apiece to a dollar and a half. Is not this a remunerative outlay of capital? Mr. Adolphe Corbett, the inventor of the process we are about to describe, is a young-looking man of forty years and a native of Belgium. He has devoted most of his life-time to the study of animals, and besides being a frequent contributor to the scientific journals of France and the land of his birth, he is the author of several works on ornithology, etc. . . . During the last severe winter, with the snow lying several feet deep on the ground, he was almost overrun with young chickens, nearly all of them growing into strong and healthy birds, notwithstanding the inclemency of the weather.

Scientific American

Any farmer who possesses a manure-heap, according to the inventor of a new incubator, is provided with the essential means of artificially hatching chickens. The idea is to utilize the natural heat of the manure to produce and maintain the requisite temperature for the incubating process. The apparatus, which is quite simple, consists of a cask or cylinder of wood, near the bottom of which is a door for convenient access to the interior. . . . When the chickens appear, the interior

of the cask is cleaned, and an artificial mother inserted and adjusted to a proper height from the bottom. The manure is still left around the latter, the heat being necessary for the young chickens until they have grown sufficiently to warrant their removal.

American Artisan

Prof. Corbett is a Belgian gentleman, who has made the subject of artificial poultry-raising a matter of long study, and who has written a history of artificial incubation which is, we think, the best essay we have ever read upon the subject. Moreover, he has invented, and through the "American Artisan" Patent Agency, has recently obtained a Patent for an apparatus for hatching and rearing poultry, which is a remarkable advance upon all previous attempts in this line. The artificial heat obtained from fermenting manure has long been used in the forcing of seeds to early and strong germination. Precisely the same principle is adopted by Mr. Corbett, the heat of manure-beds being employed to hatch his chickens. We recommend everybody interested in this subject to write to Professor Corbett for his book which will be found extremely interesting.

Philadelphia Sunday Sun

Among the incubators actually on exhibition at the Centennial, in the Agricultural Hall, we have noticed that of Prof. A. Corbett, manager of the Gallinoculture Institute, situated at Hicksville, N. Y. This incubator works without fire or lamps. All the necessary heat is obtained by the heat of horse manure, which surrounds the apparatus. The temperature is regulated by means of a thermometer and of the chimneys. By this system all persons having at their disposition some horse-manure, can raise poultry during all the year; for this apparatus does not only answer for the purpose of the incubator, but by a simple and ingenious arrangement is transformed into an artificial mother. It is more than one hundred and twenty-five years since this system was discovered by

the celebrated De Reaumur, French physician, and if to-day the farmers and American breeders can use this process, it will be on account of Prof. A. Corbett, who has neglected no trouble, time, or money to make this discovery practicable. This enterprising gentleman has exhibited his apparatuses at the New York State Fair, the American Institute, and at a great many county fairs. He has also had the satisfaction of seeing his process not only praised by the most leading and competent newspapers, but also admired by more than one million of persons.

Prof. A. Corbett has received for his discovery all the reward than an inventor may ever hope to obtain. And the visitors can see Prof. Corbett's space, over 50 feet square, covered by diplomas, bronze and gold medals, given by State and county fair and also by the American Institute. As all our readers may believe, this important discovery has caused a little revolution in the poultry breeders' population. But this revolution is calming since Prof. A. Corbett has written a work in which he explains all his process. We have read this book and have found it the most valuable and the most interesting work for poultry men and farmers which has ever been published.

New York Herald

About two years ago we informed the readers of the "Weekly Herald" that Prof. A. Corbett, of Hicksville, L. I., was hatching and raising poultry by means of horse-manure. This discovery has been perfected and extensively known through the energy and perseverance of the inventor. He has also submitted his system to competent judges, who have awarded him various recompenses. Professor Corbett's system consists of a simple apparatus made of wood, which is placed in the middle of a heap of horse-manure, about eight feet long and four feet thick, the capacity of this apparatus varying from 100 to 1,000 eggs, according to the wants of the operator. After great experience and the sacrifice of thousands of eggs, lost in trials at

different times, the inventor has won complete success. The eggs are cooled off by exposure to the fresh air the same as when the hen covers them. Every one is aware that the hen, while setting, cools off her eggs, either in leaving the nest every day for twenty or thirty minutes or else changes their position under her; for nothing is more curious than this instinct of nature. It is the heat combined with the air that hatches the chicken, and which is necessary to give life to the chick. Professor Corbett having a thorough knowledge of poultry raising, and having invested \$50,000 in it, was not willing to stop to consider it as a luxury, but has taken nature as she is, and what so natural as to use the manure made on a farm for this purpose? After using the apparatus for twenty-one days as a hatcher in the manure-heap it is turned into a mother. Thus, without steam, lamps, or hens, the Professor is enabled to raise poultry. In a new book which Professor Corbett has written, he frankly declares that it is not to him that any honor is due for this discovery, but entirely to that celebrated De Reaumur, who made many experiments, and who, on St. Martin's day, 1747, read before the Academy of Sciences in Paris, a report in which he gave an account of his experience and success. As often happens, this report was lost sight of, with others, and it no longer became a question interesting to the public press.

Professor A. Corbett constructed a "poultry factory" upon a farm of 100 acres, his buildings covering 8,000 square feet. According to the author's idea, when we eat an egg we consume an unripe fruit, not as regards our health, but in a commercial sense. Why is it, he asks, that all the eggs are not made into chickens? Because nature has only allowed the hen to hatch part of her eggs. A hen lays on an average 120 eggs yearly. Of this number she hatches out about 10 only; the others are sold at, say two cents each, making \$2.20. Let us suppose that of the 110 eggs 75 only are turned into chickens, and are sold at 50 cents each, we would realize the sum of \$37.50. Now deduct the value of the eggs, \$2.20, and feed for chicks

at 20 cents each, \$15; total cost \$17.20. It would leave as profit \$20.30 more than by the present system to each hen. Now, in France, they feed 40,000,000 hens, and realize \$80,000,000. According to the above statement they would realize \$801,000,000, or \$721,000,000 more. These figures certainly deserve notice and are worth studying.

Chicago Daily Tribune

A new system of breeding poultry by artificial means has much interested the farmers of this State during the past twelve months. The invention consists in hatching and raising all kinds of domestic fowl by the aid of horse-manure alone. It is the work of a Belgian gentleman, Prof. Adolphe Corbett, who has made this country his permanent home, and is now seeking to indoctrinate his views regarding poultry-management upon the agricultural community. For this purpose he has carried on an immense chicken factory on Long Island during the past year, proving conclusively to those who have visited it, that fowls, ducks, geese, turkeys, etc., can be hatched and raised by his apparatus in far greater numbers, and at much less expense, than by any other known system. . . . Chickens hatched and raised by the process above described are as healthy and vigorous as any to be found elsewhere, and they are incomparably more numerous than those produced by what is ignorantly termed the "natural" method. Some farmers, however, as well as many professional poultry-breeders, possess such crowbar-like backbones that they cannot bend to any proposed improvement on the old style of doing things. Here, however, is one fact that the most obstinate among them can comprehend: a hen sets twenty-one days. As soon as she makes known her intention to hatch, take a dozen or thirteen eggs out of the Corbett Incubator which have already undergone the process of hatching, say, fifteen days, and place them in the hen's nest. Six days afterward they will hatch, and the hen no longer suffers from her useless sentimentality for setting.

The Evening Post, N. Y.

This machine, or rather machinery, as there are two processes connected with it, does the whole work with the exception of producing the eggs. The eggs are put into one compartment and the artificial heat required for incubation is obtained from manure. When the chickens are hatched there is an artificial mother provided, under which they brood as comfortable as with the hen.

New York Weekly News

The cost of the Corbett Apparatus is so moderate as to place it within the reach of almost every family in the Union; and we shall probably find these "Incubators" and "Mothers," before long, necessary appendages in most of our farms and poultry-yards, while spring chickens, ducks and turkeys will be selling at one-third the price we have to pay for them now.

Chicago Weekly Tribune

Hatching eggs without the help of the hen is the easiest matter possible, and in no sense whatever contrary to nature. Ostriches never hatch theirs, nor do alligators, crocodiles, snakes, the world of insects, or the teeming denizens of the waters. Where the hen really becomes what is thought to be necessary, is when she "gathers her chickens under her wings," so as to warm and succor them. Corbett's artificial mothers effect the same result not merely as well as the hen, but in some respects far better; for they never trample upon, lame, nor kill the chicks, nor do they lose them in the fields, or give them the rheumatism by leading them over wet ground. The vast crowds of young chickens to be seen, from time to time, at the Hicksville Institute, practically prove that the system there adopted is a correct one; for the youngsters are as bright in plumage, ravenous, and active as any to be found elsewhere, while the mortality amongst them is incomparably less.

The Corbett system is equally operative in the dead of winter as during spring, summer, or fall. Last January and February, with the snow many feet deep on Long Island, and the mercury trying its best to run through the bottom of the thermometer, the Institute at Hicksville was literally overrun with thousands of newly-born chickens, which three months afterward sold for \$1.50 the pair. Here is an important consideration to farmers. In the winter months, especially out west, little farm work can be done; but if our agricultural readers will only give their time to poultry raising on the above system during that period, their cash-books will show unexpected results at the annual balancing. The system itself is so simple, as well as the management of the apparatus, that children of six or seven years of age can carry it out as well as adults, perhaps better, for they are more gentle and cautious in their actions than dashing, broad-shouldered, leg-of-mutton-fisted farmers of forty or fifty years of age. Any description, lengthy or otherwise, of this new system of hatching and raising poultry can never be so convincing as when seen in actual operation. The little chicks pouring out of the incubators, and running in and out of the artificial mothers, tell a more eloquent story than any pen can write.

New York Sunday News

It is an old and true saying that "the man who causes two blades of grass to grow where only one was found before," is a benefactor of his race, and judged by this standard, Professor Adolphe Corbett of the Gallinoculture Institute, Hicksville, L. I., deserves the gratitude of his fellow citizens. In the establishment founded and conducted by him he hatches and raises poultry of all descriptions by the simple use of horse-manure; not merely rendering hens entirely unnecessary, except for laying eggs, but multiplying the number of his chickens, ducklings, etc., at least tenfold.

Long Island Farmer, N. Y.

One of the most interesting exhibitions on the grounds of the Queens County Agricultural Society is that made by Mons. Corbett, a French gentleman residing at Hicksville, who has a chicken incubator in full operation, the necessary heat being generated by ordinary stable-manure. A large breed of chickens were hatched in plain sight yesterday.

Hempstead Inquirer, N. Y.

Corbett's Hatching Apparatus.—The exhibition at the late Fair of the Queens County Agricultural Society of Corbett's Hatching Apparatus attracted universal attention and comment. It was something, the value of which to farmers and poultry raisers was comparatively unknown. Its utility was endorsed by the Agricultural Society, as will be seen by reference to the action of its directors at their meeting on the 17th inst., published elsewhere. The award of a gold medal and diploma to Mr. Corbett is but a just acknowledgment of the value of his apparatus, and will be approved by all who, like ourselves, have seen the incubator in operation.

Daily Saratogian, N. Y.

Hatching Chickens Artificially.—The idea of hatching eggs by artificial heat is no new one, nor even the idea of using the natural, even heat of a manure-pile, but no one has succeeded before this wide-awake Frenchman, Mons. Corbett, in inventing a simple apparatus for utilizing that kind of heat. After much experimenting and expense, at last Mons. Corbett completed an invention, very successful in hatching healthy chickens, and said by good judges to be the great discovery of recent years. Several of the boxes with their sliding-doors, ventilation-pipes, etc., are on exhibition, and within an enclosure in Mechanics' Hall are dozens of chicks of different breeds and ages running about or scuffling for crumbs and grain. A

crowd stood about this exhibition hour after hour, and indeed it is one of the most interesting features of the fair.

Boston Traveler

All who raise poultry, whether for profit or amusement, should read a book by Prof. A. Corbett, inventor of the incubator and artificial mother. . . . The professor is the most successful poultry farmer, and the system he adopts is the correct one. . . . Fowls, ducks, turkeys, and geese can be hatched and raised by means of his Incubator and Artificial Mother, with four-fold the success and at less than half the expense of any other known method. The work may be carried on at all seasons of the year alike, spring, summer, autumn, or even in the depth of winter; it goes forward equally well all the year round, and what is more, the management of the apparatus is so simple that quite young children can attend to it quite as well, if not better, than adults. . . . By means of Prof. Corbett's Incubator every vitalized egg may be turned into a chicken. . . . The cost of the Corbett apparatus is very moderate; so moderate, indeed, as to place it within the reach of every owner of poultry throughout the country; and we cordially recommend an investigation of facts and figures in connection therewith.

Cincinnati Weekly Times

Hatching eggs without the help of the hen is the easiest matter possible, and in no sense whatever contrary to nature, as Prof. Corbett ably demonstrates in his book. Every farmer and housewife should read this work, in which is shown that it needs simply a manure-heap to accomplish this result.

New York Illustrated Weekly

At the late exhibition in Agricultural Hall, Column C. was an exhibit which at all times attracted great numbers. It consisted of an Incubator and Artificial Mother for hatching eggs and raising poultry of every

kind. This, however, was not done by the old and very dangerous methods, long ago condemned, of gas or kerosene flame, the heat generated by horse-manure being the only agent used. The idea of using the heat obtainable from manure of this purpose is not new. In 1747, on St. Martin's Day, the celebrated scientist, Reaumur, member of the Royal Academy of Sciences at Paris, wrote to that Academy a paper setting forth and explaining his researches and success in giving life to the embryonic fowl by the heat of horse-manure alone. But this valuable discovery has reached perfection through the labors and researches of Prof. Adolph Corbett, who received a patent for his apparatus. . . . Gold medals have been awarded to Prof. Corbett by the judges at the Centennial Exhibition, the American Institute, State and county fairs, as well as a number of diplomas. The discovery will undoubtedly be of great benefit to all who breed poultry for pleasure or profit, especially those who make it a business to supply the markets of our large cities.

NOTE

The Scientific Poultry Breeders' Association, being desirous to place Prof. A. Corbett's plan among the poultry breeders, which will enable them to be benefitted by this wonderful discovery, has secured all rights to dispose of in the United States of America the right to make and operate a similar apparatus, of which a letter of patent, number 164810 has been granted to the said Prof. Adolph Corbett. If the party would not use new wood, this apparatus can be made by utilizing the laths used in a flour barrel, therefore the association has printed an elaborate illustrated book, containing plans explaining how all parts and sections are constructed, and how they must be adjusted together for the hatching apparatus, as well as for the brooder, also how to arrange the manure and a guide to regulate its temperature.

The rights for the personal use will be granted on the following terms:

For	100	Eggs' Capacity and Brooder	\$	5.00
"	500	" " " "		10.00
"	1,000	" " " "		15.00

The above amount must be paid at the time of sending the application, either by registered letter, post office order, or by express company.

Address—

THE SCIENTIFIC AMERICAN POULTRY BREEDERS' ASSOCIATION.

Masonic Temple,

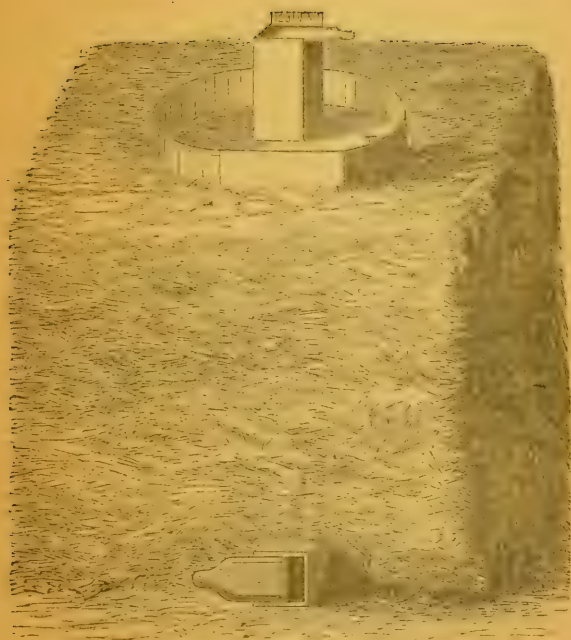
CHICAGO, ILL.

NOTE—The right to construct an apparatus of 100 eggs' capacity, allows also to make one brooder, and five for 500, or ten for 1,000 eggs' capacity.

NOTE.—If desired, an Apparatus will be supplied at the following prices:

100 eggs' capacity	\$	25.00
500	"		80.00
1,000	"		150.00

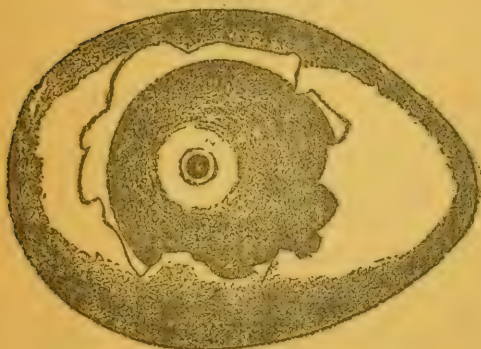
Every apparatus of 100 eggs' capacity contains also a mother: for instance, 500 eggs' capacity has five mothers attached to it.



This Figure Represents an Apparatus Having One Hundred Eggs Inside in Incubation.

GRADUAL
Transformation of an Egg
DURING ITS STAY IN
THE APPARATUS

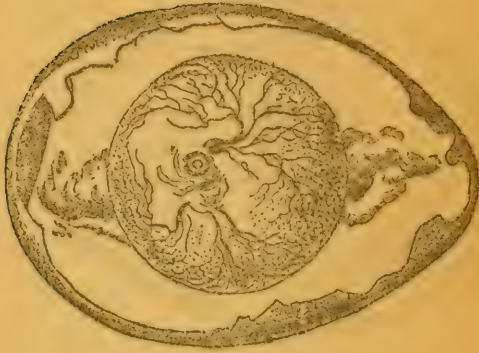
AFTER 6 HOURS



2ND DAY



4TH DAY



5TH DAY



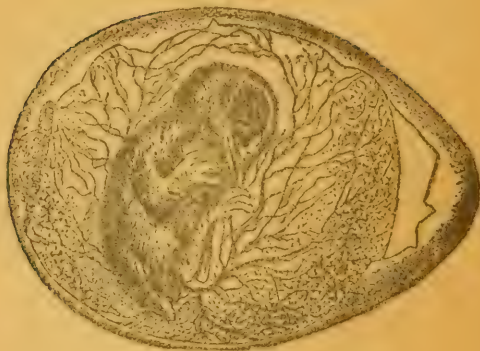
6TH DAY



9TH DAY



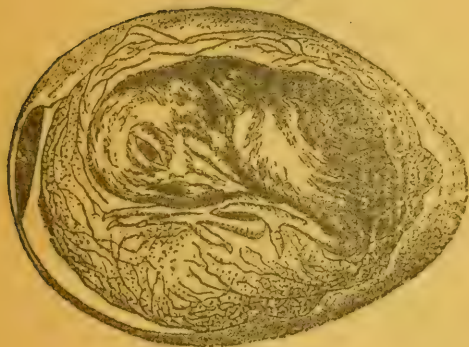
11TH DAY



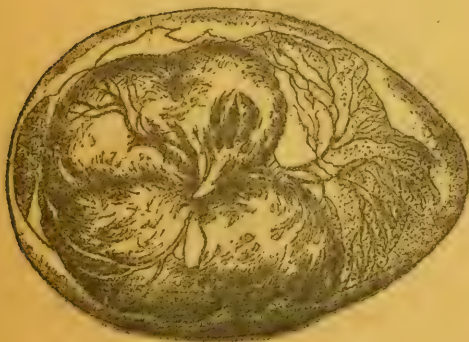
12TH DAY



15TH DAY



18TH DAY



20th DAY



21st DAY



Those wishing to buy the right for foreign countries, must write to the inventor, care of the Scientific American Poultry Breeders' Association, Masonic Temple, Chicago, Ill.

FACTS

"This book cannot fail to be of great service to farmers."

—New York Herald.

"An important consideration to farmers."

—Chicago Tribune.

"Every farmer and housewife should read this book."

—Cincinnati Times.

"Cannot fail to be of great service to farmers."

—Chicago Inter-Ocean.

"We saw the proof of Prof. Corbett's success."

—American Agriculturist.

"Should be in the hands of all who devote time and attention to the raising of fowls."

—Boston Traveler.

"Nothing has ever been published which will prove so important to the farming interest."

—N. Y. Long Island Farmer.





How to Make \$500 Yearly Profit

WITH TWELVE HENS

HOW TO MAKE THEM SET SIX DAYS
INSTEAD OF TWENTY-ONE

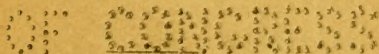
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FOR WHICH

45 Medals and Diplomas

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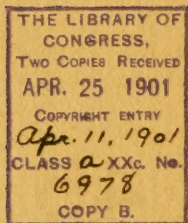
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